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Tenth Russian National Dialogue on Chemical Weapons Nonproliferation and Destruction

(selected presentations)

October 28 – 29, 2008
Moscow, Russia

Green Cross Russia
Green Cross Switzerland
Global Green USA



Tenth Russian National Dialogue on

Chemical Weapons Nonproliferation and Destruction

(selected presentations)

October 28 – 29, 2008
Moscow, Russia

This collection features the proceedings of the Tenth Chemical National Dialogue on the Implementation of the Chemical Weapons Convention by Russia as of the end of 2008.

Those in attendance included:

- Representatives of regional authorities in areas where chemical weapons are stored and destruction of chemical weapons is taking place; federal departments and agencies, communities and other Russian organizations involved in carrying out the Federal Target Program for Chemical Weapons Destruction;
- Representatives of foreign countries involved in the destruction of chemical agents in the Russian Federation; and
- Representatives of the media, non governmental organizations and the public.

Dialogue Organizers: Green Cross Russia, Green Cross Switzerland, Global Green USA and the Russian Federal Agency on Industry.

Sponsors: Governments of Canada, Finland, Switzerland, and the United States

Special thanks to the editing and translation team are noted on the last page of the book.

The presentation texts and research papers that are published in this Dialogue's collection have been translated and edited into English from original Russian versions, and are the sole opinion of the authors.

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Foreword

The presentations included in this volume are taken from a two-day "Forum-Dialogue" organized by three national affiliates of Green Cross International – Green Cross Russia, Global Green USA, and Green Cross Switzerland. This meeting took place in Moscow, Russia on October 28-29, 2008 and is the tenth annual National Dialogue on Chemical Weapons Nonproliferation and Destruction which Green Cross and Global Green have organized under auspices of the international "Legacy of the Cold War Program." This program is known as the "Security and Sustainability Program" in the United States.

This annual meeting is intentionally called a forum-dialogue in order to emphasize the importance of multi-stakeholder discussion, debate, and transparency at all levels of society. The reader will thus note that presentations range from the international level of arms control, disarmament, and verification, to the local level of citizen concern over environmental and public health impacts of weapons demilitarization. Federal and regional officials are also included, as are representatives of the Group of Eight (G-8) Global Partnership. About three-quarters of the presentations made during the meeting are included here in this volume; those not included were simply because a text was not received from the presenter in time for translation and printing. Please note also that most presentations were made in Russian; most texts included here are therefore translated and edited from the original Russian.

The global elimination of all chemical weapons, chemical agents, and related laboratories and production facilities has been a long, complex, and politically contentious process. A major turning point in this historic process took place in January 1993 with the signing of the international Chemical Weapons Convention (CWC) which bans all development, production, stockpiling, and use of chemical weapons. Having taken over twelve years to negotiate at the United Nations Conference on Disarmament in Geneva, the Convention was signed by over 125 countries in the first month and eventually entered into force four years later in April 1997. Today 186 countries have become States Parties, representing some 98% of the world's population, and only eight countries still remain outside the disarmament regime.

The Green Cross/Global Green forum-dialogue, an annual event in Moscow for the last decade, is aimed at promoting transparency and helping facilitate the safe and timely elimination of chemical weapons stockpiles globally. Global Green USA has also organized an annual "Legacy Forum" in Washington DC, similarly oriented at promoting public dialogue and progress in the elimination of chemical weapons stockpiles. These annual meetings are part of the Green Cross International "Legacy Program" on weapons demilitarization which has operated in Russia, the United States, The Hague, Geneva, and elsewhere to engage the nonproliferation, arms control, and disarmament process for nuclear and chemical weapons, biological pathogens, and related weapons systems.

Much progress has been made in the elimination of chemical weapons since this forum-dialogue began a decade ago. Of the six CWC States Parties which have declared chemical weapons stockpiles, two – Albania and South Korea – have now completed their destruction programs. A third – India – will complete the elimination of its stockpile in 2009. A fourth – Libya – is in process of constructing its facility and

has a 2010 deadline under the CWC. And the two largest possessor states – Russia and the United States – have now completed destruction (or first-stage neutralization in the case of Russia) of 30% and 57% respectively. Together these programs have destroyed about 43% or 30,657 metric tons, according to the Organization for the Prohibition of Chemical Weapons, of the world's declared total of 71,316 metric tons.

While the safe elimination of over 30,000 tons of deadly chemicals – mustard, lewisite, phosgene, sarin, soman, VX, and other chemical agents – represents a giant step forward in the abolition of a whole class of weapons of mass destruction, major challenges remain. Not the least of these challenges is the fact that still another 40,000 tons must be safely destroyed in the next three years before the April 2012 deadline in the Convention. This ambitious goal is unlikely to be met by Russia and the United States. The US has in fact admitted that it will not meet the CWC deadline, while Russia has recently begun to soften its public declarations about destruction schedules.

In addition to much-delayed destruction schedules in Russia and the United States today, the fact that eight states remain outside of the CWC regime is very troubling. Of particular concern are four countries – Egypt, Israel, North Korea, and Syria – all of whom are suspected of having chemical weapons capability. The accession of both Lebanon and Iraq in recent months is a very positive step forward, but these countries must be brought into the CWC in the foreseeable future to establish a truly universal abolition regime.

The presentations herein cover a wide variety of related and important issues, including costs and schedules of destruction; financial support by Russia, the US, and other G-8 Global Partners; public health and environmental monitoring; state and regional regulations and permits; and citizen concerns. While not all-inclusive, this annual forum-dialogue is the one place where a reader can obtain a comprehensive sense of the many challenges involved in abolishing chemical weapons. I am sure that the negotiators of the CWC would have never imagined three decades ago that this process would be so expensive, time-consuming, and contentious as it is today.

The Moscow forum-dialogue continues annually as a critical piece of this global security initiative only because of the good support of Green Cross Russia, Green Cross Switzerland, Global Green USA, and Green Cross International. Financial support for the 2008 Moscow meeting has come from the governments of Canada, Finland, Switzerland, and the United States. We also very much appreciate the active participation of the Russian Federal Agency of Industry, responsible for the chemical weapons destruction program in Russia; of the OPCW in The Hague, responsible for global implementation and verification of the Chemical Weapons Convention; and for the active participation of government representatives from Canada, Germany, Switzerland, and the United Kingdom.

Paul F. Walker
Director, Security and Sustainability Program
Global Green USA (The US Affiliate of Green Cross International)
March 11, 2009

Status and Perspectives as of Year End 2008

Lessons Learned

From the History of Chemical Disarmament: International Negotiators' First Visit to the Shikhany Arsenal, October 1–6, 1987



Oleg Lisov, Captain 1st Rank, Member of the Union of Journalists, Correspondent Member of the International Environmental Union, and Expert on the Soviet Delegation during Negotiations to Draw Up a Convention on the Prohibition of Chemical Weapons, 1982–1989

The decision to demonstrate the country's serious intent to free our land from chemical weapons (CW) emerged from the core of the Central Committee of the Communist Party of the Soviet Union and the General Staff of the Soviet Ministry of Defense sometime in the early 1980s, long before the Chemical Weapons Convention (CWC) was signed. For several years, the annual, slow-moving international negotiations at the Disarmament Committee in Geneva failed to produce any real results toward disarmament. These were broad, historical insinuations about the dangers of the presence of massive stockpiles of toxic agents on our planet (of course, "no one" knew exactly how much there was, and the members of the main delegations were not permitted to speak about it). The representatives of Nigeria and Kenya spoke with particular eloquence and captivating descriptions about the potential end of civilization on Earth as we know it due to clouds of toxic agents. The buttonholes of their suit jackets were adorned with fresh red roses and a UN chemical weapons pin. These speeches usually began from the period of the Carthaginian wars and ended with the Vietnam war.

It was during one of the sessions of the USSR's Central Committee that Marshal Akhromeyev, head of the General Staff, and Commander of the Ministry of Defense's Chemical Corps Colonel General Vladimir Pikalov proposed to accelerate the entire negotiations process, by inviting all negotiating countries to visit the Shikhany chemical weapons test range in the Saratov Oblast. The Soviet government made an official announcement. This was the first constructive step taken by our country on the international arena in the fight for total disarmament and openness, and it was a very unusual move at the time.

I was instructed to receive, accommodate and accompany the delegations. At the time, I was an expert with the General Staff for Chemical Weapons Issues, and an officer of the Contracts and Legal Department of the General Staff. In order to organize this event, which was complex for the times, 20 officers were assigned to me who were skilled in four foreign languages: English, German, French, and Arabic. The meetings, accommodations and food for the delegates were arranged at the best hotel in the capital, the Rossiya, and the relevant embassies assisted in solving any other problems.

The trip from Moscow to Shikhany and back was made on Aeroflot airplanes. The visit took place October 1–6 in 1987. Delegation members ranged from strictly negotiators to scientists, industry and media representatives and military officials. Despite the official ban on photography, the delegates — including media representatives — were permitted by Colonel General Pikalov, then-Commander of the Russian Chemical

Corps, to photograph anything they wished. The visitors met this permission with great appreciation and even applause.

The facility tour program was very carefully planned so that the delegates would have the opportunity to view the test range and the residential zone, and especially the labs and equipment and stockpiles over the course of three days. During the presentation of different types of chemical weapons (primarily the most powerful in terms of effectiveness and the volume of toxic agents they contained, such as munitions, air bombs and spray tanks), reports on fundamental topics were presented:

- The key tactical and technical features of military chemical munitions.
- The key tactical and technical features of chemical air-delivered munitions.
- Chemical weapons artillery.
- Close-range chemical arms.
- Soviet toxic agents, their properties and how they are used in ammunition.
- The standard methods used by the Soviet Armed Forces to determine toxicity levels.

During these presentations, the delegates could see over 20 different types of ammunition, munitions, air bombs, airborne spray tanks, and close-range weapons. At the end, those who wished to do so viewed a demonstration of the actual effects of nerve agents on living creatures.

During the demonstration and the report on Soviet chemical weapons, the delegates were offered an opportunity to evaluate the equipment and one of the potential methods for destroying chemical weapons developed and used at Shikhany for eliminating unsafe munitions. The guests were able to look, touch, and assess the equipment and control devices used for these purposes. They were shown a mobile complex and a demonstration on the neutralization of a 250-kilo chemical air bomb.

The demonstration of practically the entire chemical arsenal and the possible ways of destroying it was a clear example (display) of the Soviet Union's desire to do away with weapons of mass destruction; the decision was made to prepare an effective international convention as quickly as possible.

The visit to the Shikhany arsenal in 1987 was an important contribution on the part of the Soviet Union and the entire Warsaw Pact of socialist countries toward releasing international tension, and it later contributed to the end of the Cold War.

At that time parties negotiating the convention - an important international disarmament treaty - were lucky enough to hold the actual chemical weapons in their own hands. People felt the significance of this event and even pride of having been involved. The delegates thanked the organizers, and especially Colonel General Pikalov, Hero of the Soviet Union, who was personally involved in the preparation of this unusual international project. He was truly a courageous, determined and competent man.

The tour to the Shikhany chemical arsenal played an important role in accelerating the preparation of the Chemical Weapons Convention, which was signed in Paris in 1993 by 150 countries, and now promotes global peace.

The Role of the OPCW in Chemical Weapons Destruction and the Ongoing Importance of Destruction Efforts in the Possessor States



Krzysztof Paturej
Director of Special Projects, OPCW

Mr Chairperson,
Distinguished Guests,
Ladies and Gentlemen,

I am very pleased to have this honour of addressing the 10th Annual Russian National Dialogue on the status and perspectives of Russian Implementation of the Chemical weapons Convention, here in the great and wonderful city of Moscow. The Organisation for the Prohibition of Chemical Weapons fully supports the goals and multifaceted agenda of this important event, which will contribute to further development of the international community's efforts in the field of disarmament.

On behalf of the Director-General of the OPCW, H.E. Rogelio Pfirter, I will deliver a statement focusing on the role of the OPCW in elimination of chemical weapons and the importance of ongoing destruction efforts in the possessor States.

But, let me start by recalling that in April 2008, Member States of the OPCW met for the Second Special Session of the Conference of States Parties to Review the operation of the Chemical Weapons Convention. The Second Review Conference renewed the strong commitment of States Parties to the noble goals of the Convention, reiterated the critical importance of this instrument, and reaffirmed the essential contribution it makes to confidence-building and to cooperation among States Parties, as well as to their own national security. States Parties affirmed that the Convention sets new standards for both disarmament and non-proliferation through its non-discriminatory and multilateral verification regime.

Given the sensitivity of security perceptions, any multilateral conference dealing with the important issues of disarmament and non-proliferation is bound to encounter divergences and disagreements. The Second Review Conference had its challenging moments in bridging the differences on a number of critical issues. However, in the end, the consensus that emerged bears testimony to the wisdom and constructive spirit of the CWC States Parties. The OPCW once again confirmed that it is a platform of cooperation and agreement. It is good news for disarmament and non-proliferation and indeed good news for multilateralism.

In this connection, the OPCW welcomes the important and constructive role played at the Second Review Conference by the Russian Delegation.

On the question of destruction of chemical weapons, the Review Conference reaffirmed that the complete destruction of such weapons is essential for realising the

object and purpose of the Convention, and welcomed the statements of possessor States reiterating their commitment to meeting the final, extended deadlines for destroying their chemical weapons stockpiles.

As of today, the OPCW has verified the destruction of more than 28,600 metric tonnes of Category 1 chemical weapons (those containing the most deadly chemical warfare agents). This represents over 41% of the total stockpiles declared by six States Parties, namely Albania, India, the Libyan Arab Jamahiriya, the Russian Federation, the United States of America (US) and A State Party which has requested anonymity. In addition, 915 metric tonnes, or 52% of the declared Category 2 chemical weapons (those containing other toxic chemicals) have been destroyed as well as all Category 3 chemical weapons (mainly unfilled monitions) that have been declared by States Parties.

Last year, Albania became the first State Party to complete destruction of its chemical weapons stockpiles. Another historic milestone was reached on 10 July of this year when a second State Party completed the destruction of its entire stockpile. The OPCW confirmed the declaration by this State Party that it had fulfilled its obligations and has consequently ceased its systematic verification there of destruction activities.

OPCW wholeheartedly congratulated this second States Party for the unwavering commitment it has shown in achieving this important goal, which takes the world one step closer to complete chemical disarmament and reinforces the validity of the CWC.

OPCW also praises another possessor State, namely India, for the resolve it has consistently demonstrated to completing the destruction of its stockpiles within its extended April 2009 deadline. As a result, India has already destroyed over 97% of its Category 1 chemical weapons stockpile and is expected to reach its 100% target by the above deadline.

The Libyan Arab Jamahiriya's plans to ensure the destruction of its chemical weapons stockpile are on track. The required processes involving technical reviews and approval of relevant plans concerning the destruction facility and activities has been completed by the OPCW Executive Council. This will set the stage for the destruction of Libya's chemical weapons by 2011.

However, we remain aware of course that the 2012 final deadline for completing the destruction of all declared chemical weapons stockpiles poses significant challenges, especially for the two major possessors, the Russian Federation and the United States.

The Russian Federation has to date completed the destruction of more than 11,600 metric tonnes, of its Category 1 chemical agents, constituting almost 30% of its stockpiles. One Chemical Weapons Destruction Facility (CWDF) – "Gorny" has completed destruction. Three CWDF's "Kambarka", "Maradykovsky" and "Leonidovka" are operating. This year Russian Federation also plans to put in operation another CWDF "Schuchye", as well as the second train of the Maradykovsky", in 2009 "Pochep" and in 2010 "Kizner". These efforts demonstrate the commitment expressed by the Russian Federation to fulfilling its obligations under the Convention within the established timelines. Such commitment and the concrete steps being taken by Russia are reflected in a report from a recent visit to this country by a delegation of the OPCW Executive Council.

The assistance provided by the G8 countries and other donors in support of the Russian Federation's destruction programme has been essential for reaching the current momentum of chemical demilitarization in Russia, and we certainly hope that this vital cooperation will continue in the future. Yet, the lion's share of resources necessary are

coming from Russian Budget, which is another proof of your country's deep commitment to chemical disarmament and indeed the rate of CW destruction today is the highest among all the remaining possessors.

The other major possessor, the United States of America, has already destroyed nearly 15,400 metric tonnes or 55% of its declared stockpiles. New destruction facilities are under construction which will add to the existing U.S. capacity to destroy chemical weapons, and likewise demonstrates the resolve of this State Party to meet its obligations under the Convention. It should also be noted that the U.S. contribution to the goals of the Convention is not restricted to its own disarmament progress. The US has provided critically needed assistance to several other countries in their destruction efforts.

Both the United States and, as I mentioned earlier, the Russian Federation have hosted visits by delegations of the Executive Council to their chemical weapons destruction facilities. These visits have enabled Council representatives to gain first-hand knowledge about operations at the destruction facilities of these two countries and of the overall magnitude of their undertaking. After visiting the Shchuchye chemical weapons destruction facility last month, the Council delegation's overall impression as stated in its report was that "the Russian Federation was firmly committed to fulfilling its obligations under the Convention within the established timelines and that it was taking concrete steps to that end".

In view of the large quantities of chemical weapons that the Russian Federation and the U.S. need to eliminate in a safe and environmentally sound manner, and the inordinately large expenditures this obligation entails, these visits have enabled a better understanding, by other Member States and OPCW as a whole, of the challenges that both States face as well as the political will they demonstrate in dealing with these difficulties.

OPCW reiterates its deep appreciation to both these possessor States for their firm commitment to upholding and fulfilling their obligations under the CWC.

In conclusion, I would like to express to you my gratitude for this opportunity to give an overview of developments from the perspective of the OPCW as it relates to chemical weapons destruction and the ongoing importance of destruction efforts in the possessor States.

In this connection, I would like to praise the efforts of Green Cross International and Green Cross Russia, which led to the formation of the Russian National Dialogue on CWC. This very important process is now 10 years old and can be proud of its achievements. This is an extremely interesting experience, which shows how the various CWC stakeholders can be brought together and how favourable conditions for their cooperation can be developed.

It is therefore important to note that the Second Review Conference underlined the importance of the involvement of all stakeholders in the promotion of the Convention's goals. Encouraged by this view taken by the Review Conference, the OPCW is now looking at possible concepts aimed at maximising benefits from the engagement of various CWC stakeholders in the common work on the implementation of the Convention.

Thank you very much for your kind attention.

Chemical Weapons Destruction in the United States



Paul F. Walker
Director, Security and Sustainability Program
Global Green USA

The United States and Russia are the two major chemical weapons possessor states, each with about 28,000 and 40,000 metric tons declared respectively. I will focus in this presentation on the progress of the United States in safely eliminating its large chemical weapons stockpile, and on its challenges in meeting the quickly approaching 2012 legally binding deadline for complete destruction under the Chemical Weapons Convention (CWC). But many of these issues are equally relevant to Russia's program for eliminating its large arsenal as well. I also preface my remarks by emphasizing that I speak only for myself and our Green Cross and Global Green USA colleagues; I in no way represent any government, international organization, or corporation.

Of the 184 members of the Chemical Weapons Convention (soon to be 186 with the accession of Lebanon and Iraq), six countries have declared chemical weapons stockpiles (figures are at CWC Entry into Force [EIF] in 1997):

- United States -- 27,140 metric tons (28,123 prior to EIF)
- Russia -- 39,965 metric tons
- India -- 1,044 metric tons (estimated)
- South Korea -- 3,000 metric tons (estimated)
- Libya -- 24 metric tons
- Albania -- 16 metric tons

The United States declared nine CW stockpiles in eight states and Johnston Atoll: Anniston, Alabama; Pine Bluff, Arkansas; Pueblo, Colorado; Newport, Indiana; Blue Grass, Kentucky; Aberdeen, Maryland; Umatilla, Oregon; Tooele, Utah; and Johnston Atoll in the Pacific Ocean. The original plan in the 1980s to eliminate these deadly weapons was to construct three central incinerator facilities and to ship the weapons to these destruction sites. The US Congress became concerned over the risks of shipment and banned the movement of weapons and chemical agents shortly thereafter. So today the US is operating and constructing destruction facilities at each stockpile site, thereby precluding the need for shipment of any weapons and dangerous agents, but also increasing construction costs.

Globally two of the six acknowledged possessor countries have now completed their CW stockpile destruction programs: Albania completed eliminated its relatively small stockpile in 2007 with the help of the United States and several other countries; and South Korea completed its destruction program in 2008. I should note here that South Korea has not admitted publicly that it has a chemical weapons stockpile and has refused to provide any details on its size, location, composition, or destruction technology. At the Organization for the Prohibition of Chemical Weapons (OPCW) in The Hague, it

is diplomatically recognized as "the other State Party" in discussions about possessor states; South Korea has requested full confidentiality at the OPCW.

India will be the third possessor state to finish its destruction program, likely in 2009. It too, while acknowledging a chemical weapons stockpile, is very non-transparent regarding its location, composition, or destruction program. Libya acknowledged a relatively small CW stockpile just a few years ago and is in process of constructing its destruction facility to meet its 2010 CWC deadline.

Russia has been successful in destroying about 30% of its CW stockpile to date – some 12,000 metric tons of chemical agents at four stockpile sites – Gorny in the Saratov Oblast, Kambarka in the Udmurt Republic, Maradykovsky in the Kirov Oblast, and Leonidovka in the Penza Oblast. It will also open the fifth facility at Shchuch'ye in the Kurgan Oblast in the coming six months or so.

The United States, which decided unilaterally and bilaterally with the Soviet Union some twenty years ago to destroy its CW stockpile, has now completed destruction of about 57% of its CW stockpile – some 15,500 metric tons as of October 2008. The first CW destruction facility on Johnston Atoll opened in 1990, so it has taken about 19 years to come this far. This destruction total represents chemical agents from seven of the nine declared US stockpiles. Three stockpiles have now been fully destroyed: Johnston Atoll in 2000; Aberdeen, Maryland in 2005; and Newport, Indiana in 2008. Four additional facilities continue to operate: Anniston, Alabama (51% destroyed); Pine Bluff, Arkansas (16% destroyed); Umatilla, Oregon (36% destroyed); and Tooele, Utah (73% destroyed). And two stockpile sites – Blue Grass, Kentucky and Pueblo, Colorado – are under construction, with the expectation that they will begin operations in a few years.

Overall, there has been much progress in the global effort to abolish all chemical weapons. One can cite the following major successes in this process:

- Some 31,500 tons of chemical weapons have now been eliminated in five possessor states over the past nineteen years; this represents about 44% of declared CW stockpiles.
- Two countries have importantly finished their destruction program already – Albania in 2007 and South Korea in 2008. India will follow this year.
- Fourteen CW destruction facilities have been constructed to date, and another seven are under construction.
- Sixty-one of sixty-five former CW production facilities have now been destroyed or converted in twelve countries.
- All declared chemical weapons stockpiles in CWC member states have now been declared, inspected, and inventoried by the OPCW.
- There have been no known serious injuries or deaths in almost two decades of dangerous operations of CW destruction facilities – at least directly related to destruction activities.
- Some $20-25 billion has been committed to date by the G-8 Global Partnership in the global quest to eliminate chemical weapons. The United States alone has spent probably 75% of this enormous total, and will likely spend that much again before its program is finished in a decade or more.
- The OPCW, with some 175 international inspectors, has verified the safe destruction of all of these stockpiles since 1997 when the Convention entered into force.

- The OPCW has performed over 3,400 inspections in 81 countries to date, including stockpiles, former production facilities, and commercial chemical industry.

But my presentation would be remiss if it overlooked the remaining challenges for us all in this ongoing process. Without going into detail, a few of the major global challenges today would be the following:

- Almost 40,000 metric tons of chemical weapons still await destruction; this represents about 56% of the six declared national CW stockpiles. This would require annual destruction rates of about 13,000 tons in order to meet the CWC mandated deadline of 2012, while the possessor states have only destroyed about 1,700 tons annually since this process began.
- Funding requirements for these CW destruction processes remain very high – well over $1 billion annually in both the US and Russia. This amount of project costs is far above early estimates; the United States, for example, will likely spend upwards of $40 billion for its three-decade-long program, some twenty times initial estimates.
- The CW destruction program continues to be burdened with very contentious politics and public disagreements over the choice of technology (largely choices of incineration versus neutralization), over transparency and stakeholder involvement, over appropriated risk assessment, and over protection of public health and the environment. This public sensitivity should come as no surprise to astute observers, given that we're dealing with weapons of mass destruction.

And challenges specific to the United States program would include the following:

- The heterogeneous nature of the US chemical weapons. To use the CW stockpile of some 3,400 metric tons of agents at Umatilla, Oregon as an example:
    - It has required six different campaigns to destroy the 155,543 Sarin (GB) nerve agent weapons in 2006 and 2007.
    - It has required another five different campaigns to destroy the 50,741 VX nerve agent weapons in 2007 and 2008.
    - And it will require still a twelfth campaign to burn the mustard agent and bulk containers.
- The US CW destruction schedule was estimated in 2006 by then-Defense Secretary Donald Rumsfeld to take until 2023 to complete. Rumsfeld stated that approximately 66% of the US CW stockpile would be destroyed by the CWC deadline of April 2012.
- This would mean that the US will violate the CWC legally binding deadline. While Albania was the first possessor state to violate its deadline of April 2007 by about 2-3 months due to unforeseen technical difficulties with the agent incinerator, the US has known for many years that it would not meet the CWC extended deadline of 2012 without additional annual funding and an accelerated construction process at Blue Grass, Kentucky and Pueblo, Colorado. This could be perceived and interpreted by some States Parties as

an intentional violation of legal obligations and have wider implications for the Convention.

- The transportation of chemical agents, weapons, and toxic products and effluents from the CW destruction process remains very controversial in the US and subject to a variety of local, state, and federal regulations and permits. The example in 2007 and 2008 of the US Army shipping neutralized VX nerve agent by trucks from Indiana to Veolia Environmental Services in Port Arthur, Texas, some 1,500 miles through 7-8 states, was an excellent example of the difficult politics involved. The Army began shipment without any major public discussion, thus violating past promises of complete transparency and confidence-building.
- Because of rising concern in Congress and the public over the growing delay in the US destruction program, Congress passed a deadline of 2017 for complete destruction of all CW stockpiles. A 2009 congressionally mandated report from the Army will hopefully address schedule and cost issues in order to accelerate this process, although it will now be impossible for the US to meet the 2012 CWC deadline.

In conclusion, let me make four related recommendations to help facilitate the safe and timely elimination of remaining chemical weapons stockpiles.

- First, the US will need to increase its annual funding of some $1.5 billion currently for US CW destruction programs by at least $250 million annually in order to accelerate its schedule and have any hope of meeting the congressional deadline of 2017.
- Second, the US should process as much as possible on-site rather than shipping weapons and toxic materials off-site in order to preclude inevitable legal challenges from states, public health officials, and environmental groups.
- Third, the ongoing process in the US must remain transparent and democratic. While some stakeholders were antagonized over the perceived secretive process involved in shipping neutralized VX nerve agent from Newport, Indiana, these divisions can now be overcome by making the ongoing CW destruction process inclusive and open. And,
- Four, the US, Russia, and the G-8 Global Partnership must remain dedicated, committed, and cooperative as true partners in helping both the US and Russia to continue the good progress both countries have already made in working towards a chemical-weapons-free world.

2008 Progress Report on the Chemical Weapons Destruction Process



Prof. Andrey Shevchenko, PhD
Head of the Science and Technology Center of the Federal Department for Safe Storage and Destruction of Chemical Weapons

Dear Colleagues, Russia's implementation of the Chemical Weapons Convention (CWC) under the national Federal Target Program for Chemical Weapons Destruction (CWD FTP) is now entering the final stages. By December 31, 2009, Russia will have destroyed 45% of its chemical weapons (CW) stockpiles, or 18,000 tons of toxic agents. In 2012, Russia will destroy the last of its CW arsenal.

In order to accomplish these tasks, Russia launched operations at a start-up CWD facility in September 2008 in the village of Leonidovka (Penza Oblast), in addition to the existing CWD facilities in Maradykovsky (Kirov Oblast) and Kambarka (the Udmurt Republic). Furthermore, in December 2008, start-up and set-up operations will begin under actual conditions at the CWD facility in Shchuch'ye (Kurgan Oblast).

By 2011, we will have completed the construction of the remaining CWD facilities in Pochep (Bryansk Oblast) and Kizner (the Udmurt Republic).

As of late October 2008, over 11,700 tons of toxic agents have been destroyed — 30% of CW stockpiles.

That is where Russia currently stands in terms of the CWD process. Now let us review the progress at each CWD facility individually.

The CWD facility in Gorny (Saratov Oblast) carries out scheduled processing of the by-products of the CWD process.

As of late October 2008, this facility has used thermal decontamination methods to treat over 870 tons of reaction masses produced from the neutralization of mustard gas (60% of the total volume), while the bituminization unit treated all 364 tons of reaction masses produced during the destruction of binary mixtures. At present, they have begun treating the remaining reaction masses resulting from the destruction of ternary mixtures.

Reaction masses produced from the destruction of lewisite will be processed using electrolysis, for which start-up and set-up operations will begin in November 2008 under actual conditions at the electrolysis unit.

Also noteworthy are the issues concerning preparations for the treatment of the dry salts that have accumulated from the destruction of lewisite stored at the Kambarka facility, some of which are located at the Gorny facility. Toward this end, the technical parameters of the process used to obtain commercial arsenic oxide are being refined and material reserves are being adjusted at a research unit specially created for this purpose.

The results of these efforts will determine the decision that is made regarding the conversion of the entire facility into a dry salts processing plant.

During scheduled operations, **the CWD facility in Kambarka (the Udmurt Republic)** destroyed 97% of lewisite stockpiles (over 6,100 tons). This will help transition to the destruction of the lewisite residue that is difficult to recover. This work is scheduled for completion in the first six months of 2009, at which point another Russian facility will be operational and contribute to the destruction of all chemical agents. The technology developed by Russian scientists for the continuous bulk destruction of lewisite using hydrolysis has proven to be highly effective. Since operations began, there have been no equipment problems that could potentially lead to an accident. This speaks to the high level of safety of this particular technology. However, work at the Kambarka facility is still underway: all of the reaction masses will need to be converted into dry salts at the dry granulation unit provided by the company GLATT. Currently, this unit is performing well and has already treated approximately 32,000 tons of reaction masses.

The Maradykovsky CWD facility (Kirov Oblast) uses one-of-a-kind technologies to neutralize VX directly inside chemical munitions and has already destroyed roughly 4,400 tons of toxic agents (63% of VX stored at this facility).

At present, this facility is carrying out scheduled work: the thermal decontamination of munitions casings (8,530 items) and thermal treatment of solid waste (560 tons) and reaction masses that formed during the VX decontamination process (1,620). The facility is also working to recover reaction masses from the casings of other classes of munitions.

Today, construction of the second phase of this facility is underway. When construction is complete the facility will take on the most important tasks, such as building a unit for toxic organophosphate decontamination (a reactor unit), a refrigerated unit, compressor and nitrogen stations, water-cooling chambers with a water cooling tower, a pump, and a warehouse for solutions.

In the interests of developing the area where the CWD facility is located, construction is nearing completion of two apartment buildings (14 apartments each), a fire station that can accommodate six fire trucks (in the township of Mirny), and work is underway to overhaul the roadways connecting Mirny, Orichi and Strizhi (13.5 km have been completed). Furthermore, the construction of a diagnostic and treatment center in Kotel'nich is 85% completed, work on a gas boiler unit in Mirny is nearing completion, and work to improve a sewage treatment plant is underway in Orichi.

In September 2008, the start-up complex of **the CWD facility in Leonidovka (Penza Oblast)** was launched. As of late October 2008, the unit for bulky munitions began working with a mass of VX toxic agents (over 1,800 tons), and a special unit has treated over 270 tons of liquid waste. Construction of an incineration unit, a final decontamination unit for toxic agents, and a storage facility for industrial waste are also under construction.

In the interests of developing the area where the CWD facility is located, social works and general utilities service projects are underway in Leonidovka. A diagnostic and consultation center has been built and is now operational, high- and low-pressure gas mains have been put into place, and sewage treatment plants are now operational (with a capacity of 200 m^3/day) in Zolotarevka (Penza Oblast). Roadways in Leonidovka and Zolotarevka are also being improved.

An industrial zone and a waste storage site are being built at **the CWD facility in Shchuch'ye (Kurgan Oblast).** At present, the following have been put into operation: a fire station, a gas safety station, a communications center, a tertiary treatment plant,

a boiler house, a three-chamber water cooling tower, an administrative building, and a smaller administrative unit. Equipment is now being installed at production units 1 and 14, the bituminization unit, the laboratory, and the equipment repair and maintenance unit. Construction of warehouses for raw materials, packaging and bitumen, a cafeteria, and a transformer substation has also been completed, and priority communications and ramps and paths have been put into place.

A kindergarten is being built in the facility's residential zone and will accommodate 175 students. Also under construction are a school (275 students) and apartment buildings with 48, 45, and 63 apartments in each. Road repair work is also underway in Shchuch'ye.

A hospital for the rayon has been built and put into operation in Shchuch'ye, as have a diagnostic and consultation center and a school (590 students) in Shchuch'ye, a kindergarten (90 students) in Planovy, a 24-unit apartment building for medical staff, and priority residences (cottages). Three gas boilers and a water conduit from Chumlyak to Shchuch'ye were also put into operation.

In 2008, a railway 18 km long was fully equipped. Plans are in place to begin start-up and set-up operations under actual conditions in December 2008.

With regard to the construction of **the CWD facility in Pochep (Bryansk Oblast)**, work is underway to create an industrial zone. Specifically, the frame for unit No. 11 is being put in place, and auxiliary buildings (administrative buildings within the industrial zone) are being built. A diagnostic and consultation center has been put into operation and repair work has been completed on a fire station for the military town. Buildings have been repaired and converted into a dormitory and headquarters for security staff, in addition to a unit for eliminating the consequences of accidents and emergencies.

In June 2008, an international inspection zone was also added to the territory.

Efforts to develop the area surrounding the CWD facility include the construction of a 60-unit apartment building, the repair and modernization of an infections unit at the Central Rayon Hospital, and the addition of gas supply to 53 communities in the Pochep Rayon. A residential building has been built for the medical staff of the diagnostic and consultation center. Construction of a school (768 students) and clinics near the Central Hospital in Pochep is underway.

The CWD facility in Kizner (the Udmurt Republic) is currently making preparations for the construction of an industrial zone. The most important factor here is accelerating public works projects to improve the infrastructure of the area surrounding the CWD facility. Accomplishments thus far include a hospital and clinic in Bemyzh, a 4-unit apartment building for the hospital's medical staff, the first phase of gas mains (17 km), and repairs have been made on the water main in Kizner.

In 2008, all CWD facilities underwent measures to streamline the **safety of storing and destroying chemical weapons**, including:

– metallographic studies of chemical aviation and artillery munitions in order to prolong the period during which they can be safely stored;

– purchasing and delivering replacement absorber filters for filtration systems at vaulted storage facilities, as well as pH testing equipment to the facilities in Leonidovka (Penza Oblast), Pochep (Bryansk Oblast) and Maradykovsky (Kirov Oblast);

– replacing lead filling plates and inspecting the waterproof seals of air-delivered munitions, inspecting the waterproof containers for out-of-repair chemical air-delivered

munitions;

– preparing waterproof containers for transporting out-of-repair chemical artillery munitions.

At present, the CWD facilities have been transitioned to and are successfully running on a scientifically substantiated comprehensive safety system comprised of:

– an industrial environmental control and monitoring system (IECM system);

– a system supporting government environmental control and monitoring (GECM system);

– a health monitoring system for the local residents and facility personnel;

– a support system for the decision-making process in the event of an emergency or accident.

The IECM system controls and monitors:

- the air in work zones, on industrial premises, and at facility storage areas
- emissions from industrial ventilation systems
- combustion gas from thermal waste decontamination units
- combustion gas from the facility's boiler
- the air at the health protection zone (HPZ) and emergency protection zone (EPZ)
- the waste water from the facility's wastewater treatment unit
- surface waters within the EPZ
- subsurface (ground) water
- the soil from the industrial zone, the HPZ, and the EPZ
- the snow in the industrial zone, the HPZ, and the EPZ
- the surrounding flora and fauna.

The work area and industrial zone at facilities are monitored using automated equipment that run both continuously and at set intervals.

Facility staff members are promptly notified of hazardous concentrations of toxic agents by way of the facility's emergency alarm system in the work zone. The alarm system is equipped with automatic gas alarms that run continuously and go off within 15 seconds after toxic agents have been detected in the air.

Hazardous chemical compounds in the air in the work zone are monitored based on maximum allowable concentrations (MAC) (public health monitoring standards). This aspect of control also uses gas alarms in the work zone that run continuously with sensitivity settings at 1 MAC for toxic agents found in work zone air and have a response time of up to 15 minutes.

Based on the regulations that were drawn up and approved for work shifts, air samples are taken by a sample selection device and then analyzed in a chemical analysis lab.

The cleanliness of the surfaces of equipment and personal protective gear is monitored using an express analysis kit. Furthermore, based on approved regulations, wipe samples are taken from equipment surfaces and later analyzed for hazardous chemical compounds in a chemical analysis lab.

Continuous monitoring of maximum allowable emissions (MAE) is carried out at facilities by way of fixed, automated control devices at each air duct.

The industrial zone of each facility is monitored by periodically collecting samples from the air, rainwater and soil at defined points. These samples are then analyzed at a chemical analysis lab in line with approved sampling procedures.

Another component is the **environmental control and monitoring of HPZs and EPZs** at each facility. This is done in order to observe and collect data about the content of pollutants in the local natural environment (air, water, including subsurface water, and soil) for subsequent evaluation of the safety of facility operations for the local residents and the environment. This monitoring process involves assessing the actual level of pollutants and comparing results with standardized indicators (MAC per populated area, and soil and airborne exposure limits), which are later used to formulate recommendations on lowering (stabilizing) pollutant emissions and other waste.

Temporary posts (labs) are used for monitoring purposes. These posts collect samples from the natural environment and defined points on facility premises ranging from the industrial zone to the borders of the EPZ. The samples are preserved and delivered for analysis at the facility's chemical analysis lab. Furthermore, periodic monitoring of pollutants in the air is carried out using permanent control points.

In order to ensure chemical and biological safety, there are also provisions in place for monitoring the flora and fauna found on the territory of the CWD facilities.

The data obtained via communications channels reaches the information and analysis center, where data is processed for the purposes of producing statistics, charts, and maps. The center monitors the performance of data channels supporting connections with automated monitoring devices and stores processed data, which is provided to the facility dispatcher upon request.

The facility's information and analysis center network works together with regional control and supervisory bodies, municipal administrations and the local authorities. Standardized forms are used to relay information about facility operations, and the state of chemical, biological and environmental conditions within the different facility zones to the relevant agencies. This data is also sent to the Public Relations Group (PRG) so that it can also be relayed to the public.

Based on environmental monitoring data from the HPZs and EPZs of CWD facilities, environmental conditions are kept stable, and standard MACs and MAEs are not exceeded. Furthermore, objective industrial environmental control and monitoring is conducted by facility services in line with the requirements set out by nature preservation legislation.

Work to develop State Environmental Control and Monitoring Regional Centers (SECMRC), which are located in the regions where CWD takes place, has continued toward ensuring the environmental safety of the CWD process.

SECMRCs have been launched in five of Russia's regions (the Kurgan, Kirov, Bryansk, and Penza Oblasts, in addition to the Udmurt Republic) and they include a central environmental analysis lab for monitoring toxic agents and the by-products of their destruction, a biomonitoring and biotesting lab (for the development, introduction, and adaptation of biotesting toxic agents and the by-products of their destruction), and an information and analysis center. The institution of SECMRC in the regions where the CWD process is or will be taking place is conducted in line with the requirements of federal laws and other statutory legal acts applicable to environmental conservation and the safety of the CW storage and destruction processes in the Russian Federation.

Agreements have been reached with the Departments for Technological and

Environmental Oversight (under RosTekhNadzor) in the Kurgan, Kirov, Bryansk, Penza and Saratov Oblasts and the Udmurt Republic regarding the use of specialized regional centers that will work toward supporting efforts in government environmental oversight and control at CW storage and destruction facilities.

Work is constantly underway to adjust environmental regulations as applicable to industrial operations, to develop standards and regulatory documentation in environmental conservation, and adjust and streamline the environmental control and monitoring system.

SECMRC activities in 2008 were carried out in line with standard procedures for government environmental control of pollutant sources at CWD facilities. In 2008, SECMRCs carried out scheduled monitoring at pollutant sources (emissions, waste water, industrial runoff, waste, and reaction masses) and also monitored key points in the natural environment on facility premises (air, soil, surface and subsurface water, and snow). The results of chemical analyses as part of the control and monitoring process reveal that the environmental conditions at CWD facilities and their respective HPZs and EPZs are stable and that there have not been any cases in which standard indicators were exceeded.

Health Conditions of Facility Personnel and Local Residents

In 2008, efforts were made to meet the requirements of Russia's Federal Law No. 52 (March 30, 1999) on public health and the epidemiological welfare of the population in order to monitor the public health conditions of industrial premises, territories and the environment surrounding CWD facilities. These efforts included the introduction of new practices in public health standards for exercising government public health and epidemiological oversight with regard to the operations and subsequent elimination of former facilities that were used to produce chemical weapons. These practices apply to disassembled construction material and the air in work zones (MACs in work zones, VX, MALs for VX pollution as regards absorbent and non-absorbent equipment surfaces, construction structures and scrap metal, MACs of VX in scrap construction materials and sludge from thermal decontamination, emergency airborne exposure limits for VX toxic agents in CWD facility work zones, and MAL for toxic organophosphates as applicable to personal protective gear).

A total of 35 new methods have been prepared, certified and put into practice for measuring the content of toxic agents and the by-products of their destruction, facilitating the CWD safety and environmental monitoring process in the corresponding areas.

In 2008, more work was done toward creating a common health monitoring system during the storage, transport and destruction of CW, such as the creation of an automated personal register of CWD personnel and the residents living and working in facility EPZs. The register includes data on over 10,000 citizens whose jobs involve CW and citizens who live and work in facility EPZs in Gorny (Saratov Oblast), Kambarka (the Udmurt Republic), Maradykovsky (Kirov Oblast), and Shchuch'ye (Kurgan Oblast), in addition to the former staff members of past facilities that produced and developed chemical weapons.

In keeping with the provisions of Federal Law No. 76 (May 2, 1997) on CWD and the CWD FTP, local medical establishments and experts from Russia's Federal Medical-Biological Agency (FMBA) have made efforts to study the health conditions of those living in the areas affected by CW storage and destruction and how those health

conditions have changed. The FMBA has worked toward securing administrative and methodological support and consultation while organizing and running operations at diagnostic and consultation centers. At present, diagnostic and consultation centers have been instituted and are up and running under the central rayon hospitals in Gorny (Saratov Oblast), Kambarka (the Udmurt Republic), Shchuch'ye (Kurgan Oblast), Pochep (Bryansk Oblast) and under the Ternov Central Rayon Hospital of the Penza Oblast and in Maradykovsky (Kirov Oblast). Diagnostic and consultation centers are equipped with modern diagnostic equipment. They have contributed to a vast improvement in the quality of medical studies of the citizens living in EPZs.

Under a public health monitoring program in 2008, the supervisory bodies of the FMBA and RosPotrebNadzor (the federal service on surveillance for consumer rights protection) conducted over 30,000 inspections of environmental conditions at CWD facility EPZs. No violations of public health standards were found.

The local bodies of RosPotrebNadzor have been collecting samples of the air, water and soil in EPZs in six territories to determine the content of priority pollutants.

The monitoring results reveal satisfactory environmental conditions within the controlled population points and a lack of toxic agents or by-products of CWD in the natural environment surrounding these towns and villages.

An analysis of the health conditions of representative samples of CWD facility EPZ residents, based on the results of a comprehensive medical study, has shown that, overall, the illnesses that have been identified among EPZ residents are correlated with age, gender, and poor everyday living conditions. The irregularities that were found in the health of the EPZ residents match average nationwide indicators in Russia. Preliminary data on the health conditions of children and adults (changes in the immune system, the number of birth defects and developmental disorders in children, and others) will contribute to objective differentiated evaluations of facility operations in the future. The areas that were included in the study have demographic conditions that adequately reflect the state of natural migration among the Russian population. The observations made with regard to the health of those who live near CW storage facilities have not revealed any statistically reliable variations in the range or severity of diseases among EPZ residents compared to those of the residents of other areas.

No illnesses that could be connected with the effects of toxic agents on the human body were identified in any of the areas that were included in the studies.

In conclusion, I can confidently state that we have everything we need to meet the tasks that have been assigned for the CWD process and we are fully capable of completing the third stage of the international obligations set out in the CWC.

An Update on UK Assistance at Shchuch'ye



James Harrison, Deputy Director,
Counter-Proliferation and Arms Control,
Ministry of Defence, United Kingdom

I am grateful to have the opportunity to address this important gathering again. The UK welcomes the major contribution that the Green Cross has made to improving public understanding of the issues relating to chemical weapon destruction, both in Russia and internationally. Within Russia, Green Cross has a key role both at national level, and at local level. The UK has therefore been glad in recent years to contribute funding both for national events such as this, and for the local Green Cross office in Kizner.

Over the past year, Russia has continued to make very impressive progress in its destruction programme, as we have heard already this morning. The total destroyed is now nearly 30% of the original declared stockpile; Kambarka is close to completing operations, and a fourth destruction facility has started operations at Leonidovka. I congratulate Viktor Kholstov and all involved on this achievement. There is still much to do, but by now there is also much to celebrate.

I will focus the rest of my presentation on Shchuch'ye.

As already mentioned today, the Director General of the Organisation for the Prohibition of Chemical Weapons and the Chair and senior representatives of the Executive Council visited Shchuch'ye on 10 September. The purpose of the visit was to consider the progress and efforts being made towards achieving complete destruction of declared chemical weapons, in accordance with the deadlines for destruction specified in the Chemical Weapons Convention. The overall impression of the delegation was that the Russian Federation was firmly committed to fulfilling its obligations under the Convention within the established timelines and that it was taking concrete steps to that end. The visiting delegation appreciated the spirit of cooperation, transparency and openness that marked the visit and accordingly thanked the Russian Federation. They reaffirmed the utility of such visits and recommended they continue. This independent, external validation is clearly a very positive development.

Looking back at the presentation that I gave here last year, I note that my concluding comment was: "The UK is committed to completing our planned projects at Shchuch'ye, and we expect to do so over the coming months."

Since last year's meeting there has been substantial progress on all the projects that the UK is implementing at Shchuch'ye. All the remaining projects that we planned at that time were put on contract by early this year. Several have been completed, the rest are close to completion. Almost all will be completed by the end of December. We currently expect that elements of only two of our previously planned projects will continue beyond 31 December: one into January, the other into February. I can therefore say with some confidence that we are now approaching the very final stages of the UK programme of work at Shchuch'ye. Today, I will give a brief summary of project

progress.

Starting with **equipment for the destruction process**, all the main items of equipment have been completed and delivered to site. These comprise the **catalytic reactors** and the **destruction process lines**, both funded by Canada; and the **metal parts furnace**, funded by the UK, Netherlands and Ireland. The Russian side has installed all these items in Building 1A; this is the first of the two destruction process buildings, which is planned to start operations later this year.

A variety of other **destruction process equipment** is on contract, funded by Canada, France and the UK. This is being delivered to site progressively, in batches, some to Building 1A, and some to Building 1 – the second destruction process building, which is planned to start operations in 2009. Where equipment procured by the UK is being installed into one building, equipment procured by the US is being installed in the other, since both buildings contain essentially identical equipment.

In addition to the equipment already on contract, the Russian side has requested the UK to procure two further items of destruction process equipment. These are the **Motor Control Centre** for the Metal Parts Furnace, and a pair of **extractor fans**, both to be procured from US manufacturers. The Motor Control Centre is on contract, and we have agreed in principle to procure the fans, subject to acceptable prices and other terms.

Turning to **infrastructure projects**, the largest single one is the **railway**, funded by Canada. Despite earlier delays, construction of the whole railway is now virtually complete, with little more than rectification of minor deficiencies needed. We expect to hand over the whole project to the Russian side in the very near future, so that it can be used to transport munitions to the destruction facility from the storage site some 17km away.

A further infrastructure project funded by Canada – the **Local Public Address System** – was completed in September. This will enable information to be broadcast to local communities in the event of an emergency.

A number of other infrastructure projects were completed prior to this year, including the **water supply**, procurement of **electricity supply equipment**, and a **communications system**.

The other remaining infrastructure project is a vital one – completion of the **electricity supply**. It is being funded by Belgium, the Czech Republic, Finland, Ireland, The Netherlands, Norway, Sweden and the UK. This project has repeatedly been beset with difficulties, and I am grateful for the patience and flexibility of all the donors concerned while these have been resolved.

The **equipment procurement** element of the project was successfully completed in October last year. The contract for the associated construction and installation work was placed in December, and initially work progressed well. Unfortunately, difficulties then arose as a result of substantial design changes that had taken place, without consultation with the UK or the Russian authorities. However, these difficulties were resolved over time, and work is progressing in accordance with a revised schedule. We have also agreed in principle with the Russian side to arrange a visit to site by representatives of donors who have contributed to the electricity project. This is likely to take place early in 2009, following completion of the project.

A key feature of the UK's programme at Shchuch'ye is that we have managed a number of projects which have used funds contributed by donors other than the UK. The UK very much welcomes the opportunity to work with a large range of other donors

under the Global Partnership. I highlight in particular our very close partnership with Canada in many of the projects at Shchuch'ye. It is only right to list here the other donors involved, and to take the opportunity to thank them all: Belgium, the Czech Republic, the European Union, Finland, France, Ireland, The Netherlands, New Zealand, Norway, the Nuclear Threat Initiative, and Sweden.

I would also like to give a brief update on numbers. The UK has committed some J20M to contract for projects at Shchuch'ye, and has spent a further J2M on related management costs, including on behalf of other donors. Canada has contributed over J46M through the UK programme, including J1M for MOD's management costs. Other donors have contributed some J14M in total. All these funds are committed to contracts. In addition, interest of some J4M has accrued on donor funding while held by the UK. As a result, the total donor expenditure on contracts managed by the UK amounts to over J80M, excluding the UK's own management costs. The UK provides periodic updates to the Russian MFA and FAI on the use of donor funds, and includes information in the UK's Annual Report on the Global Partnership, published in English and Russian.

Compared with the total cost of the facility and the contribution by the US, the UK's contribution at Shchuch'ye has been modest in scale. We have given priority to practical implementation of projects; our aim is to fully meet Russian design and quality requirements, while also fully meeting donors' requirements by providing value for money, transparency and accountability. So far, we have been successful in both these aims. I believe that the UK has had a particularly useful role in enabling other donors to make funding contributions with confidence that we will effectively manage their funds.

In summary, the UK assistance programme at Shchuch'ye is now in its final stages. We expect all the projects currently on contract to be completed by the end of this year, except for elements of two which will continue to January or February. Two small additional projects are likely to extend somewhat further, given the time likely to be needed for delivery from the suppliers in the US to Russia.

Thank you for your attention.

Completion of Projects and Preparing for Future Cooperation



Colleen Pigeon
First Secretary, Global Partnership Program,
Embassy of Canada in Russia

Good morning.

It is truly a pleasure to once again attend the Green Cross National Dialogue on Chemical Weapons Destruction. Not only do I have the opportunity to meet with many of my international and Russian colleagues who work on this important issue, but I am also able to tell you about the many Canadian funded projects that have been successfully completed this year.

We have heard this morning from the UK Ministry of Defence representative who mentioned the projects funded by Canada and managed by the UK at Shchuch'ye. I would like therefore to simply provide you with a few details about each of these projects.

The first item I would like to describe is the Canadian-funded railway project, which consists of construction of an 18 km railway and bridge linking the chemical weapons storage facility to the destruction facility. It is expected to be completed no later than the end of 2008. This project has a total value of $37 million Canadian dollars, which includes a $1 million US dollar contribution made by the Nuclear Threat Initiative for the construction of the rail bridge.

In addition to the rail line itself, Canada has funded the construction of an Inspection Station, which will be used to inspect the rail cars on their arrival at the destruction facility from the storage facility. The Inspection Station was added to the initial scope of work as part of the railway project in August 2007 and was completed earlier this year.

Canada has also provided approximately $10 million Canadian dollars for high-priority infrastructure projects at Shchuch'ye. These are the Local Public Address system – which was completed in September this year - and the Inter-site Communication project which I reported was completed and handed over to the Russian party last year. The Local Public Address system provides timely information to residents in the 16 settlements located near the facility while the Inter-Site Communications system provides a secure high-speed communications channel between the storage facility, the destruction facility and the telecommunications centre in Shchuch'ye.

Critical equipment for the destruction of chemical weapons is also being supplied to the Shchuch'ye facility through funding from Canada. Fifty-five million Canadian dollars were provided to supply the demilitarization process lines, munitions thermal treatment process lines, and leakers treatment area; catalytic reactors; and the Venturi scrubber - a vital piece of equipment to ensure safe processing of reaction gases. All of this equipment has already been delivered to site.

Three additional packages of equipment, essential to the functioning of the destruction facility, were funded by Canada. These packages of equipment have a

value of approximately $20 million Canadian dollars. The majority of this equipment is expected to be delivered to site before the end of 2008.

Careful management and close cooperation with our Russian counterparts, as well as the project management support provided by the UK and their principal contractor, Bechtel, has been key in reaching our common objectives. Overall, 90% of Canada's project commitments at the Shchuch'ye facility have been fulfilled. The final 10% of the projects will be challenging and many important milestones still need to be achieved, but we have shown our commitment to deliver projects to time, quality and scope and we will continue to do so.

At the G8 Summit in St. Petersburg, Canada committed $100 million Canadian dollars for the Kizner Chemical Weapons Destruction Facility. We are making progress on this commitment, and I can report that Canada and Russia have agreed to the overall scope of work and funding to provide equipment and materials for the Kizner facility. All cooperation under this agreement will be governed by the Canada-Russia bilateral treaty for Global Partnership projects, which was signed in 2004.

MinPromtorg has clearly stated its commitment to build the chemical weapons destruction facility at Kizner and have set ambitious targets for equipment delivery and construction of the facility. Canada is working to support these targets.

Canada has agreed in principle to provide funding for the production of the catalytic reactors as well as the destruction process lines and related equipment at each of the two main destruction buildings.

To conclude, I would like to thank Green Cross Russia, Green Cross Switzerland and Global Green USA for their continued work to inform citizens and to bring together all of those interested in chemical weapons destruction in Russia. This is an activity that Canada supports in a tangible way through our contribution to the operation of the Green Cross Public Outreach and Information Office (POIO) in Izhevsk and through our support of this conference.

Thank you very much for your attention.

Progress Report on the German Program within the G-8 Global Partnership



Stefan aus dem Siepen
Counselor, Political Department, Embassy of Germany in Russia

Ladies and Gentlemen, thank you for the opportunity to speak to you about Germany's contribution to the destruction of Russia's chemical weapons stockpiles.

Since the adoption of the **Global Partnership Against the Spread of Weapons and Materials of Mass Destruction**, under which the government of Germany promised to contribute **USD 1.5 billion** over the period of 2003–2012, the German government has been working with the Russian Federation in **three areas**: the destruction of Russian chemical weapons, the disposal of submarines, and the physical protection of Russian nuclear facilities.

A total of EUR 340 million has been contributed toward the destruction of Russian chemical weapons. Projects in Gorny and Kambarka have been completed. Our final project is in Pochep (Bryansk Oblast), on which I would like to focus the remainder of my talk today.

Approximately 67,000 munitions containing 7,500 tons of weapons-grade toxic nerve agents (VX – 4,850 tons; sarin – 240 tons; and soman – 2,400 tons) are stored in Pochep. Consequently, Pochep now holds the largest Russian stockpile of chemical weapons. A chemical weapons destruction (CWD) facility will be built twelve km from the storage facility. In early 2010, the destruction process of these toxic warfare agents will begin.

The funds from Germany have gone specifically toward an incinerator for solid waste that can also be used for thermal decontamination of empty chemical munitions, and the installation of two production lines for incinerating reaction masses and liquid waste. Furthermore, a wastewater treatment unit is being assembled for water used in smoke purification during waste incineration. In another part of the facility, decontaminated shells are deformed or cut into pieces.

The unit is being put together in a building that is part of the total delivery. This building will be equipped with a complex forced-air and exhaust ventilation system with an air purification function.

In all, Germany plans to contribute EUR 140 million toward the Pochep project.

Thank you for your attention.

Swiss contributions to chemical weapons destruction in the Russian Federation



Hans-Ruedi Bortis,
Minister & Charge D'affaires,
Deputy Head of Mission,
Embassy of Switzerland in Russia

Dear President of Green Cross Russia, Mr. Sergey Baranovsky, dear ladies and gentlemen, good afternoon. First of all, I would like to thank, on behalf of the Swiss authorities, Green Cross for organising this 10th National Dialogue Forum. We remain convinced of the value of such a conference and are delighted to co-sponsor it. The long list of participants proves how useful such events are. This forum remains a unique opportunity to bring people together who, from a very different perspective, are all pursuing a common goal.

In the framework of the programme started in 2003 to support chemical disarmament in the Russian Federation, Switzerland will have spent more than 360 million roubles on projects by the end of this year, 2008. This is about 80% of the total Swiss funds allocated to this programme. Before briefly telling you what was realized this year, let me remind you that four projects were already completed by the end of last year:

First, the Sanitary and Hygiene Monitoring System around the Shchuch'ye destruction facility. Second, the reconstruction of the electrical substation in Kambarka. Third, the purchase through Green Cross of emergency radio receivers to equip the households in the Kambarka area. And fourth, a part of the equipment for the construction of the electrical substation in Maradykovsky.

Our major project of this year is Leonidovka. It consists in the financing of 66 million roubles of equipment for the construction of the electrical substation that supplies the chemical weapons destruction site. The construction is now completed and the project will be visited by our technical expert at the end of November. As for the projects in Kambarka and Maradikovsky, this substation will be reconverted to supply electricity to the local community once the destruction operations are completed.

We are about to sign the implementation agreement for our last project in Pochep, with the financing of about 35 million roubles of equipment for the electrical substation. With this project, the last part of the budget allocated to the programme started in 2003 to support chemical weapons destruction will be engaged and will mark the end of the Swiss contribution in this domain. The funding of the Green Cross outreach offices in Kirov, Penza and Pochep will also terminate at the end of 2008.

The end of these financial contributions does not mean the end of the Swiss involvement in the area of chemical weapons destruction. We will continue to finance our laboratories in Spiez, that are accredited by the Organization for the Prohibition of Chemical Weapons,and will remain active at the political level.

Switzerland started to contribute to chemical weapons disarmament in Russia in 1993 already, in financing Green Cross at their beginning. Since then and until the end of the last project in Pochep, Switzerland will have paid about 450 million roubles to

finance projects directly in Russia. To be added to this sum when calculating the total Swiss contribution to Russia are the overhead costs for salaries, travel, experts' fees and public relations. This overhead amounted to only 7% of the annual budgets over the last five years, the result of our continuous efforts to keep general expenses as low as possible and effectiveness in the management of the projects as high as possible. We were pleased to hear that the two thousand emergency radio receivers that were financed by Switzerland and distributed to the households around the Kambarka destruction site last year continue to be appreciated and that there is still high demand for these radios.

During these years of collaboration with the Russian Federation, we appreciated the partnership with Russian colleagues. We are totally satisfied by the way our projects were managed by our Russian partners. We also note the clarity of all financial aspects that enabled an effective and continuous controlling of the projects. Generally speaking, the coordination of our work was efficient both at working and higher levels.

To conclude, we praise the substantial financial and human efforts of the Russian Federation with the goal of complete destruction of their chemical weapons and welcome the fact that Russia is committed to respecting the final destruction deadline of 2012 in the Chemical Weapons Convention.

I wish you a fruitful and productive Forum.

Thank you for your attention

Common Scientific Principles Used to Create a Process Monitoring System Ensuring Safety at Chemical Weapons Destruction Facilities



Valery Demidyuk and Pavel Mudryi
Deputy Directors, General State Research Institute of Organic Chemistry and Technology (GosNIIOKhT)

Dear Colleagues, Friends and Comrades! Over many years, a team of public health experts, lab technicians, doctors, medical biologists, toxicologists, hydrometeorologists and ecologists, in addition to other experts from a variety of Russian institutions, worked together to prepare the Health Regulations on monitoring the compliance of industrial processes with public health and epidemiological (prophylaxis) regulations and the implementation of preventive measures (SP 1.1.1058-01). These Regulations came into force on January 1, 2002.

For the first time, these health regulations bring together requirements based on a unified system of scientific and methodological principles that dictate how industrial operational safety is organized and carried out.

In Russia, the monitoring of industrial operational safety is two-pronged:

– industrial enterprises use their own ongoing facility-based operational safety monitoring systems, and
– regulatory authorities monitor operational safety compliance as part of the federal oversight system.

The creation of an on-site process safety monitoring system at chemical weapons destruction (CWD) facilities is one of the key tasks involved in ensuring normal labor conditions for CWD facility staff and the population residing close to CWD facilities. It is also another means of ensuring environmental safety.

The operational safety monitoring system at CWD facilities includes:

– operational safety monitoring
– environmental monitoring, and
– health monitoring.

A developed network of on-site analysis labs, monitoring posts, and mobile labs, all created and certified under a common system, provide the operational safety monitoring at CWD facilities. These laboratories include:

– Multi-purpose on-site labs, such as:
  – on-site technological labs,
  – on-site operational safety monitoring labs;
– Facility environmental monitoring labs, including both on-site and mobile checkpoints;
– Facility industrial health labs;
– Labs operated by the State Environmental Control and Monitoring Regional Centers (SECMRCs);

– Special-purpose labs that assist in monitoring and oversight, including at an international level;
– Medical health units located on-site at the facility, and
– Diagnostic and consultation clinics.

Operational Safety Monitoring

Operational safety monitoring is comprised of:
– monitoring the work zone
– monitoring ventilation (industrial) emissions, and
– monitoring the facility premises.

The following are monitored in the work zone:
– air in the work zone (both continuously and periodically)
– the cleanliness of equipment surfaces (periodically), and
– the airtightness of equipment (continuously).

Ventilation and industrial emissions monitoring involves:
– air from ventilation and industrial emissions from the factory (continuously and periodically).

Monitoring on the facility premises involves:
– daily (periodic) monitoring of the air by testing and analyzing air samples at permanent facility labs using quantitative methods.

Environmental Monitoring

Environmental monitoring is conducted in the health protection zone (HPZ) and in emergency planning zones (EPZ). The air, water, soil, and biodiversity in the area are monitored. Monitoring is conducted in line with an agreed schedule at permanent monitoring posts and at mobile monitoring posts in motor vehicles. Samples are analyzed at the on-site analysis lab. Government oversight bodies (together with facility staff) regularly conduct quantitative assessments of the state of the work zone, the ventilation (industrial) emissions, and the facility premises. They also periodically monitor HPZs and EPZs independently.

Health Monitoring

Health monitoring involves health observation of facility personnel and the residents who live near the facility. Daily and periodic examinations are provided for facility personnel, and periodic examinations for the local residents.

The operational safety monitoring system was first used at the pilot CWD facility in the village of Gorny (Saratov Oblast). These days it is being used at CWD facilities in Kambarka (the Udmurt Republic), Maradykovsky (Kirov Oblast), and Leonidovka (Penza Oblast). Years of prior experience with safety monitoring for handling chemical weapons and the CWD process itself at temporary facilities were applied when designing the operational safety monitoring system.

A total of 67 devices have been installed at the facility in Gorny. Of those, 23 are automatic air and emissions testers, 44 are automatic equipment leak sensors. Additionally, there are 90 permanent observation posts for taking samples of air and emissions. Over the three years during which the Gorny facility was in operation, over 100,000 samples were tested for toxic agents such as mustard gas and lewisite.

The process safety monitoring system in Kambarka is comprised of 48 fixed

automatic devices that continuously monitor the air and ventilation emissions and 118 permanent automatic sampling probes that continuously track equipment leaks. The system is supported by 140 permanent posts where samples of air and emissions are collected, and 17 permanent posts where samples are analyzed directly in work zones. Since the Kambarka facility has been up and running, over 120,000 samples have been tested for lewisite.

The first processing line of the Maradykovsky facility in Mirny features an operational safety monitoring system with 22 fixed automatic devices that continuously monitor the air and emissions, and twelve equipment leak sensors, in addition to 42 permanent posts for air and emissions sampling and 13 permanent analysis points for conducting on-site analyses in work zones. Between August 2006 and September 2008, the Maradykovsky facility conducted 163,008 quantitative analyses of the technological process and 74,743 quantitative analyses under the process safety monitoring system.

As a result, the scientific and methodological approach upon which the operational safety monitoring system was based serves as a reliable tool for monitoring safe conditions at CWD facilities and fully meets the key requirements of the Chemical Weapons Convention.

Update on the Federal Target Program for Chemical Weapons Destruction in the Kirov Oblast of the Russian Federation



Mikhail Manin
Head, Chemical Weapons Convention Department,
Government of the Kirov Oblast

Ladies and Gentlemen! Allow me to welcome all of the Dialogue participants on behalf of the government of the Kirov Oblast. We hope the Dialogue is productive for everyone.

Operations were launched at the Maradykovsky chemical weapons destruction (CWD) facility in the Kirov Oblast on September 6, 2006. Its operations have made a hefty contribution to the Russian Federal Target Program for Chemical Weapons Destruction (CWD FTP), namely by completing the second stage of the Program. Over 4,000 tons of toxic agents stored in the oblast have been destroyed — that is more than 50% of the total volume of chemical weapons that have been destroyed in the Russian Federation.

This year, the facility launched incineration operations. The new incineration unit will be used for thermal decontamination of munitions casings and burning reaction masses (hydrolysates) and solid wastes that are the by-product of the facility's operations. There are also plans to complete construction of the second phase of the facility by the end of the year and begin preparations for the destruction of munitions filled with sarin and soman. Full operations are expected to begin in early 2009.

At present, the facility is wrapping up the destruction of VX munitions.

As of October 20, 2008, there are 574 munitions at the CWD facility in the hydrolysis stage, 22,899 drained, post-hydrolysis munitions, 4,494.266 tons of toxic agents have been destroyed, 1,144.978 tons of hydrolysate have been destroyed, and 7,987 shells have undergone thermal decontamination.

Facility operational monitoring and state environmental monitoring have shown that since operations were launched at the facility, no incidents in which environmental standards were breached have been recorded, nor has any detriment to the environment on the facility's premises been observed. According to data gathered by facility laboratories, VX content in air samples taken from around the work zone has not exceeded set standards.

In line with Order No. 679 issued by the government on September 12, 2008, amendments were made to the Federal Target Program (FTP). The Maradykovsky facility (Kirov Oblast) was to receive RUB 12.631 billion in capital investments, up from the previously set RUB 9.373 billion.

Since work began on the FTP in the oblast, 11 of the 21 listed public works projects were completed with Program funds and put into operation. Construction is in the final stages for the remaining projects. In addition, the government has identified an opportunity to build a regional medical center in the town of Kotel'nich using funds from the industrial zone. Construction of this center is currently 85% complete, and

work is underway to restore the road from the village of Orichi to the village of Mirny.

Also in progress is another part of the CWD FTP; the oblast government, having understood what is at stake, began to work actively with the government representative of the FTP on a number of different issues. The goal of this collaboration is to account for the interests of the oblast residents as much as possible during the implementation of the FTP.

In line with the Federal Law on CWD, certain areas have been identified for which federal agencies are to cooperate with the local authorities in regions where CWD is underway, including:

- methods used to dispose of or bury waste that is the by-product of the CWD process;
- the conversion or liquidation of CWD facilities.

At present, all of the issues related to both the construction of the facility's second phase and ensuring safety during the CWD operation, as well as public works and infrastructure construction projects, are being resolved in close collaboration between the oblast government and the Chemical Weapons Convention Department under the Ministry of Industry and Trade and the Federal Department for the Safe Storage and Destruction of Chemical Weapons (FUBKhUKhO).

In order to facilitate cooperation between the oblast's executive authorities and local municipal governments, the government issued an order in 2005 to form an oblast commission. This commission is chaired by Nikolai Gorokhov, the Deputy Chairman of the oblast government. The commission's meetings are held on a quarterly basis and address a number of topics, ranging from progress of public works projects in the Orichi and Kotel'nich Rayons to the CWD facility's preparedness to move to the next stage of the CWD process. Here I would like to especially emphasize the role of FUBKhUKhO. Any questions raised by the members of the oblast commission requiring more detailed information are met with understanding and, as a result, their experts often take part in the commission's work.

At its last meeting in September 2008, the oblast commission for CWD Issues invited Konstantin Ivanov, the Senior Engineer from FUBKhUKhO, and Vladimir Chupis, the Director of the Industrial Ecology Research Institute in Saratov, the developer of the comprehensive state environmental monitoring system. They were invited to discuss the Maradykovsky facility and its readiness to destroy sarin- and soman-laced munitions. They answered numerous questions posed by the commission members and explained several points with regard to the facility's preparedness level.

One example of the openness in joint efforts with FUBKhUKhO was an event held on September 8th this year in celebration of our facility's second anniversary. On this day, the Maradykovsky facility held an open doors day to which all interested journalists from federal, oblast and rayon media outlets were invited. They were able to view the entire facility, and later the facility management, experts from FUBKhUKhO and the oblast government representatives held a press conference, where they answered questions from the press.

I would like to mention in particular the doctors' work at the Federal Medical-Biological Agency in conducting physical examinations of the adults and children living in the emergency protection zone (EPZ). I would like to thank them for their kindness in their work with the locals and for the consideration they give to all of the requests they

receive. In response to a request from Tamara Savinykh, the Head of the Birtyaevsky community, physical examination of the children in the Leninskaya Iskra village (Kotel'nich Rayon) were organized as part of the government program for carrying out comprehensive physical examinations among the children residing in emergency planning zones (EPZs) near chemical weapons storage and destruction facilities. Experts from the Environmental Pediatrics Center (Children's Clinical Hospital No. 38 in Moscow), led by Nurali Zokirov, the Deputy Head of the Department, and experts from the Kotel'nich Rayon Hospital visited the community and conducted examinations of 140 pre-school aged children and over 280 school-age children.

In addition to cooperating with federal structures on ensuring safety, the oblast government also dedicates a great deal of time to public outreach.

Public outreach in the oblast is carried out as follows:

1. Constant monitoring of public opinion by analyzing publications in the media (at the oblast and municipal levels), citizens' letters, and requests received by the oblast government.
2. Preparation and placement of materials with federal (RIA-Novosti, ITAR-TASS), oblast, and rayon print media and on the oblast government's website. I would like to note in particular that the oblast government's website features a separate page on CWD. This page includes information about: changes in the FTP, a chronology of CWD at the facility, and the results of monitoring the CWD process and its effects on the environment. Public outreach efforts are addressed in the column "Public Dialogue."
3. Organizing and holding press conferences, briefings, roundtable discussions, and seminars on the issues associated with storing and destroying chemical weapons for various groups of the Kirov Oblast population. These events are held together with Green Cross Russia (GCR) regional offices and the newspaper Rossiiskaya Gazeta.
4. Organizing consultations for local residents on all related issues and responding to their letters, complaints and requests.

I would also like to note that all outreach activities are interrelated and complement one another. For example, when we held a roundtable discussion as part of a conference on nature conservation, questions about the preparedness of our CWD facility with regard to the destruction of sarin and soman were raised. These questions were examined, and the decision was made to refer this issue to the oblast commission.

These extensive efforts help us to quickly identify the most pressing issues that require additional explanation for the local residents. We believe that this approach helps to promptly alleviate social tension.

The oblast government would also like to mention the large contribution made by GCR's Kirov office, led by Professor Ashikhmina, to our public outreach efforts.

For several years now, they have been working diligently to educate the local population about the environment, improve the health of the children living in the EPZ, and inform local residents about issues related to chemical disarmament. I do believe that in her speech, Professor Ashikhmina speaks about the experience that has been gained in the Kirov Oblast regarding public outreach efforts. The results of these efforts are clear: the public's view on the CWD process has changed, and as a result, the questions that

the oblast's citizens ask have also changed.

I would especially like to note GCR's substantial contribution to organizing summer camps for children living in the Maradykovsky EPZ.

One result of all these public outreach efforts is the change in public opinion on CWD in the Kirov Oblast.

In conclusion, I would like to emphasize that the Kirov Oblast government has no doubt that the destruction of chemical weapons in the oblast will be carried out by the deadlines that have been set and in accordance with all safety standards.

Thank you for your attention.

Research and Data Management Components of the State Environmental Control and Monitoring System for the Maradykovsky CWD Facility



Tamara Ashikhmina, Research Director,
State Environmental Control and Monitoring Regional Center of the Kirov Oblast CWD Facility; Head, Biomonitoring Laboratory, Komi Biology Institute of the Urals Branch of the Russian Academy of Sciences;
President, Kirov Green Cross Russia

Dear Dialogue participants, the Russian Federal Target Program (FTP) for Chemical Weapons Destruction (CWD) in the Russian Federation has been underway since 1997. During this time, Green Cross International and Green Cross Russia, with the participation of representatives from six of Russia's regions, have organized ten annual events that produced a relevant and highly necessary discussion of how to ensure safe CWD in six nations.

An important part of the FTP, alongside technical, design, and construction efforts, is the research component backing the projects and the public outreach work that provides information to people living in the designated emergency planning zones (EPZs) associated with chemical weapons storage and destruction facilities.

From the very start of the implementation of the FTP, the Federal Department for Safe Storage and Destruction of Chemical Weapons (FUBKhUKhO) has worked to engage scientists at a variety of research institutions, centers, and academic institutions in development and technical support of work processes and the creation of systems ensuring safe CWD. At the fourth annual applied research conference entitled "Technical Research Topics in Ensuring the Safety of Chemical Weapon Destruction, Storage, and Transport," Viktor Kholstov, PhD, the Director of the Chemical Weapons Convention Department under the Ministry of Industry and Trade, noted that a number of institutions are active contributors, including:

- State Research Institute of Organic Chemistry and Technology,
- The Lomonosov Moscow State University Chemistry Department,
- The Emmanuel Institute of Bio-Chemical Physics under the Russian Academy of Sciences;
- The Central Experimental Research Institute (a Ministry of Defense affiliate),
- The Saratov Military Institute for Biological and Chemical Security,
- RosGidroMet Typhoon R&D Organization,
- The Center for Strategic Civilian Defense Solutions (under the Ministry for Civil Defense and Emergencies of the Russian Federation),
- The State Scientific Industrial Ecology Research Institute (GosNIIEP);
- The State Military Medicine Experimental Research Institute (under the Ministry of Defense of the Russian Federation, St. Petersburg),
- The Human Hygiene, Toxicology, and Occupational Pathology Research Institute of Russia (Volgograd),

- The Research Institute for Emergency Applications of Information Technology, and
- The Research Center on the Safe Storage and Destruction of Chemical Weapons (affiliated with FUBKhUKhO).

Researchers are conducting rigorous studies to develop methods to neutralize toxic agents, refine chemical and biological control and monitoring methods, and develop technologies to rehabilitate territories and re-purpose facilities.

The creation of environmental safety systems at CWD facilities calls for special attention. The system of State Environmental Control and Monitoring Regional Centers (SECMRCs) is in urgent need of research support for its work in the regions where CWD facilities are located. This is why there is a push for scientists at top educational institutions and research institutes that work on chemical disarmament issues to get involved.

The Industrial Ecology Research Institute in Saratov manages the creation of SECMRCs. The Institute is developing and refining methodologies for conducting quantitative chemical testing and training personnel. SECMRCs have been opened in all six regions to oversee state control and monitoring at CWD facilities.

On January 21, 1998, the Kirov Oblast Administration, when the site for the CWD facility was being selected and plans for its construction were still in the design stage, passed Resolution 81 on Research Support for the CWD Program in the Orichev Rayon (Kirov Oblast). The resolution assigned the role of research support provider to the Biomonitoring Laboratory of the Komi Biology Institute under the Urals Branch of the Russian Academy of Sciences, and the Vyatka State Humanities University. Since then and to this day, laboratory staff have taken on a number of critical projects, including environmental assessments of facilities once used or currently being used for CW storage and destruction in the Orichev Rayon; defining the environmental specifications of a CW storage facility; assessing the impact of the construction and operation of the Maradykovsky facility on the environment; calculating the size of the EPZ for the facility and preparing documentation for the approval of Resolution 81 by the Russian federal government; and developing a comprehensive environmental monitoring program for the Orichev CWD facility and other facilities.

In 2003, FUBKhUKhO, through the Industrial Ecology Research Institute in Saratov, the organization spearheading the creation of the SECMRCs, created and put into operation a biological testing and biological indicator laboratory accredited by SAAL (a Russian analytical laboratory accreditation system).

Since 2006, the biomonitoring laboratory, by way of the Industrial Ecology Research Institute, has been responsible for monitoring flora and fauna, an important component of state environmental monitoring of CWD facilities. Consequently, the laboratory developed a flora and fauna biomonitoring program for the EPZ and the health protection zone (HPZ) associated with the Maradykovsky CWD facility. This program was approved by the Kirov Oblast Directorate of the Russian National Environmental Protection Agency and the Kirov Oblast Department of Environmental Protection and Natural Resources. The program was coordinated with the Industrial Ecology Research Institute, tested, and is now successfully implemented for all parameters in the environmental monitoring system of the Maradykovsky EPZ and HPZ. In addition, the program has been made available in digital format to all SECMRCs associated with

CWD facilities, so that our colleagues can become familiar with the program and add the region-specific parameters currently being used at their regional centers.

The staff of the biomonitoring lab conducted research to help develop, test, and implement new biomonitoring methodologies. They have put together and prepared for publication a scientific methodology handbook entitled "Methodological Foundations for Conducting Biological Monitoring in the Vicinity of a CWD Facility," which was distributed to all SECMRCs.

As part of the training program for the Kirov Oblast SECMRC staff, organizers developed and obtained approval for a set of research topics to be studied by the center staff from 2006–2012. Studies were organized to research the behavior of certain compounds containing phosphorus, arsenic, sulfur, and chlorine in the environment. A study is underway on the destructive decomposition of organophosphates. Six members of the SECMRC are enrolled in graduate programs of several departments of the Komi Biology and Chemistry Institutes and at the Vyatka State Humanities University, while three Center employees are conducting independent studies and preparing their applications for a doctoral degree.

In 2007, the Vyatka State Humanities University laboratory, with support from the Industrial Ecology Research Institute, assembled the editorial staff of Theoretical and Applied Ecology [Teoreticheskaya i prikladnaya ekologiya], a popular science journal with nationwide distribution. Six issues of the journal have been published. One of the issues was dedicated to the tenth anniversary of the ratification of the Chemical Weapons Convention. Another issue contained a report on the SECMRC system in place at CWD facilities. The publications include documents from FUBKhUKhO, the State Research Institute of Organic Chemistry and Technology, the Industrial Ecology Research Institute, the ROST Association, the Vyatka State Humanities University, administration officials, and the scientific community of the six regions. In 2009, there is a plan to prepare a special issue focusing on the third stage of the CWD process in the Russian Federation. We are fostering stronger ties with the editors of Rossiiskaya Gazeta and building relationships with the ARMS-TASS information agency.

A crucial component of the outreach effort has been the Green Cross Russia Public Outreach and Information Offices (POIOs) in the regions. In our case, we have one in Kirov and another in Mirny. Of all public organizations in the area, the POIOs are the most active in their outreach work. Thanks to them, research projects are conducted, children's drawing and art contests are held, and summer health camps for schoolchildren are organized.

Under the guidance of the Kirov and Mirny POIOs, together with the Biomonitoring Laboratory, we have developed and published brochures based on the laboratory's findings under the titles "Environmental Monitoring in Action," "Young Environmentalists Study Their Homeland," and the research practicum "Monitoring Natural Environments and Sites." In 2007, the fourth edition of the training manual "Environmental Monitoring," edited by Tamara Ashikhmina, was published. In the last year, the information and analysis department of the SECMRC published 32 bulletins and organized a traveling display of literature, newspapers, and bulletins describing the center's work.

The staff of GCR POIOs and the SECMRCs actively participate in scientific conferences, seminars, breakout sessions, and round tables. Papers based on the work of the Maradykovsky SECMRC were published in the 2007 and 2008 proceedings of the regional conference titled "The Environment of Our Homeland" and the nationwide

scientific conference on Regional Environmental Issues and Sustainable Development, in which international scholars participated.

Under the guidance of the staff of the GCR POIOs and the Kirov SECMRC, using two laboratories for environmental analysis, biological testing, and biological indicators, students conduct research for term papers and graduation projects focusing on environmental security, monitoring, methods for evaluating the impact of human activity, among others.

Graduate and undergraduate students conduct comprehensive surveys of CWD facility EPZs and HPZs. The students prepare descriptions of the flora and fauna, set up field and lab experiments, and update the environmental records of key sites.

Today, the SECMRCs and the Kirov and Mirny Green Cross POIOs have developed varied, unconventional ways of working together with environmental protection entities, NGOs, municipal authorities, and different population groups.

We conducted a public awareness campaign during the first year the facility was in operation. Here, we should highlight the cohesion demonstrated by government authorities, all environmental protection agencies, the emergency civil defense and emergency response services, military experts and scientists, NGOs and journalists. This is the achievement of the Kirov Oblast government, which has taken a consistent approach to strengthening ties with various organizations and agencies involved in finding a solution for safe CWD. The Kirov Oblast government has set up a committee for cooperation with public organizations, executive authorities, and local municipal governments with regard to CWD safety issues. The administration holds regular meetings and round tables for the public, publishes bulletins, radio programs and reports that focus on issues related to the safe destruction of chemical weapons in the Kirov Oblast. The commander of Military Unit No. 1205 meets with the public, community organizations, and journalists on a monthly basis. Every Thursday, the oblast residents can listen to a morning radio program discussing operations at the CWD facility and the findings of environmental monitoring efforts prepared by the staff of the Kirov Oblast SECMRC.

With the joint participation of FUBKhUKhO, the Kirov Oblast Administration, and Green Cross Russia, in October 2006 the Vyatka State Humanities University hosted the first regional dialogue with international participants in attendance. The objective discussion at the event focused on issues associated with ensuring the safe destruction of highly toxic substances at the Maradykovsky facility.

The newly-opened information center at the Kirov Oblast SECMRC operates a public information desk. The Kirov GCR POIO staff leads a Citizens' Advisory Commission (CAC), which includes scientists and journalists, and conducts seminars with teachers and journalists.

The Mirny GCR POIO, together with FUBKhUKhO's Public Relations Group (PRG), also holds regularly scheduled meetings and discussions with the public, public awareness days, joint training with emergency civil defense and emergency response services, training in the use of personal protection equipment, and publishes bulletins. The Kirov GCR POIO publishes a page in the Orichev Rayon newspaper. GCR POIOs work with a variety of population groups to great effect.

The SECMRC works together with a range of NGOs and media outlets to form a positive public opinion on CWD. These include**:**

- The All-Russian Congress on Environmental Protection;
- The Citizens' Advisory Commission, GCR Kirov;
- Green Cross Russia, Kirov;
- GCR POIOs in Kirov and Mirny;
- The newspapers *Rossiiskaya Gazeta* and *Izvestiya;*
- ITAR-TASS, a Russian news agency;
- *Kirovskaya Pravda* and *Vyatskii Krai*, local newspapers;
- Television and radio campaigns in Kirov and the Kirov Oblast;
- Kirov Oblast Herzen Public Library and the interlibrary district fund, community centers;
- Environmental sciences departments in Kirov universities and the Institute for Continuing Professional Education;
- Biomonitoring laboratory at the Vyatka State Humanities University;
- The Oblast Educational Center for Environmental Sciences and Biology and the Natural Sciences Academy; and,
- Orichev and Kotel'nich district schools, among others.

These organizations participate in and host a variety of public project reviews, scientific conferences, forums, round tables, seminars for teachers and journalists, meetings for members of the scientific community, additional "on-subject" issues of newspapers editorials, radio specials, student graduation projects, school projects on the subject "Know Your Region," reviews, drawing and art contests, and many other initiatives.

The SECMRC regularly publishes bulletins about its work and the findings of state environmental control and monitoring. Together with the Industrial Ecology Research Institute, which spearheads this effort, the Center published supplements to the newspaper *Izvestiya*. Articles by Center staff are published in *Vyatskii Krai* and *Kirovskaya Pravda*. The work of SECMRCs set up by FUBKhUKhO has proved worthwhile and calls for the Centers' continued growth and improvement.

We have learned that in order to find solutions for complex problems such as CWD, it is extremely important and necessary to bring together military experts, government authorities, representatives of environmental protection and oversight agencies, scientists, and journalists. There ought not to be any confrontation in this process.

Two stages of the CWD process have been completed and we are now in the middle of the third stage. This stage involves the disposal of reaction masses and preparation of other toxic agents containing phosphorus, such as sarin and soman, as well as arsenic and compound mixtures of lewisite and mustard agents that contain sulfur. The scope of the work at the facility is greater than before and involves greater liability: in addition to the destruction of toxic agents, reaction masses require disposal, and new facilities are being built to house sarin and soman work.

The experience we gained in the first two stages of the CWD effort shows that systems ensuring environmental safety have been put in place at the Maradykovsky plant. The facility operates properly and the environmental control and monitoring systems ensure that comprehensive and reliable assessments can be made with respect to the state of the environment surrounding the facility.

The completed stage in the chemical disarmament process gives us confidence that Russia will be able to fulfill its international obligations with regard to the destruction of

its entire chemical weapons arsenal by 2012.

In conclusion, I would like to thank Green Cross Switzerland and Green Cross Russia for their professional partnership, for hosting annual dialogues, scientific conferences on environmental education, providing financial support for the POIOs, and for sponsoring summer camps and school projects that raise environmental awareness. It is my sincere hope that through new projects, this collaboration will continue to thrive.

Carrying out the Federal Target Program for Chemical Weapons Destruction in the Russian Federation on the territory of the Udmurt Republic in 2008



Valery Malyshev
Deputy Head, Chemical Weapons Convention Department
Ministry of Construction, Architecture and Housing Policies
Udmurt Republic

One of the main events for the residents of the Udmurt Republic and the Kizner Rayon was the start of construction of chemical weapons destruction (CWD) Facility No. 1208 in the village of Kizner, which is adjacent to a territory where chemical weapons (CW) are stored.

The feasibility study for the construction of this facility was prepared by Giprosintez Design Institute. The study's environmental impact assessment (EIA) was the subject of public hearings in which all interested parties were welcome to participate.

A positive statement was received in line with the established procedures from the Main State Expert Review Board of Russia for the design of the CWD facility's industrial zone.

By the end of 2012, the CWD facility will have destroyed 5,744.65 tons of organophosphate chemical agents stored in surface warehouses in artillery shell casings, including:

- sarin – 3,911.50 tons
- soman – 1,395.16 tons
- VX – 308.61 tons
- viscous lewisite – 129.38 tons.

If we refer to history and the material published by Green Cross Russia in 1998 on the fourth public hearings on CWD, it is easy to draw the conclusion that the sentiments of the Kizner Rayon residents at the time were, for the most part, against the construction of the CWD facility. But the local population's interest in CW storage and destruction issues was relatively high. A variety of viewpoints were expressed about approaches to the issue as a whole. And that is why the local residents had a difficult time finding their way through the information that was available.

Some of the statements made by the participants (local residents) of those hearings include:

- "there is no information instilling hope in CWD technology."
- "the Udmurt Republic will not be turned into a dumping ground for all of Russia, since no one is giving us any guarantees that the CWD factory [referring to the facilities used to store and destroy CW in Kambarka and Kizner] and the nuclear warhead destruction plant in Votkinsk won't spread toxic agents everywhere."
- "the subject of an arsenal is closed," "the most serious argument against building the plant is the state of health and the living standards of most Kizner residents."

It should be stated that the decision of the Russian government to build a CWD facility in the village of Kizner in 1996–2005 was changed twice. First, a facility was planned in Kizner (1996, Order No. 305), and later the transfer of chemical warheads to the CWD facility in Shchuch'ye (Kurgan Oblast) was favored (2001, Order No. 510).

Nevertheless, Green Cross Russia and its regional Public Outreach and Information Offices (POIOs), in collaboration with the relevant agencies of the Republic, has continued to work proactively with the population and the public in the Kizner Rayon toward resolving chemical disarmament problems. Today not everyone has the same opinion about the project, which is why education efforts, in all forms, should be actively continued.

The government has allocated budget funds for the immediate public construction works and infrastructure projects in the interest of developing the region.

In 2002–2004, the government built and put into operation a hospital complex in the village of Bemyzh, and a two-story, four-apartment residence for hospital staff. Construction is currently nearing completion on the recreation hall, which can accommodate 500 people and features a small stadium area. Construction of the local gas grid, water supply system, and improvement of local roads are all also underway. The total volume of planned government capital investments for these projects amounts to RUB 1.0675 billion.

The rayon leadership, the Citizens' Advisory Commission (CAC), Green Cross Russia's POIO, and the Public Relations Groups (PRG) from Military Unit No. 55498 regularly monitor and inform the local residents of the CWD facility's construction in the town of Kambarka, progress of capital works construction projects benefiting the local residents, the actions that are taken toward ensuring the safety of the technological processes, and the creation of an environmental monitoring system. They use specific examples to demonstrate to the village's residents that their town will see similar projects stemming from the CWD facility in surrounding areas of the Kizner Rayon.

The government of the Udmurt Republic, by way of the Udmurt Ministry of Construction, is doing everything it can to assist the federal government at all stages of building and launching the CWD facility and public works projects.

We submit proposals on the priority of the construction of public works projects, and we monitor the process of the design and construction processes, as well as the financing contributed to the construction of infrastructure projects. We engage the construction supervisory inspectorate under the Udmurt Ministry of Construction to monitor the quality of the construction and the proper filing of permits and other documentation for the government over the construction period.

We also provide assistance in meetings and by sending inspection groups to both CW storage and destruction facilities.

We were also interested in attracting the scientific, technical and industrial expertise of the companies and organizations of our Republic that would be interested in a competitive bidding process for a government contract to build the CWD facility. These companies worked on the CWD facility in Kambarka and are still involved in the construction process in Shchuch'ye (Kurgan Oblast).

I would like to say a few words about Kambarka. The lewisite destruction process is nearing completion at Facility No. 1203 in the town of Kambarka. As of today, 6,000 tons (the volume of lewisite previously stored was 6,349 tons) have been destroyed. Reaction masses (hydrolysates) that resulted from the lewisite neutralization process are

being dried and broken down into granules before being shipped out to the CWD facility in Gorny (Saratov Oblast).

The operations at the CWD facility are being run by experts from the Federal Department for the Safe Storage and Destruction of Chemical Weapons (FUBKhUKhO) and other specialized and licensed organizations: the Federal State Scientific Research Institute for Organic Chemistry and Technology, and the Redkinsk Experimental Automation Design Bureau.

Since the facility has been up and running (since December 2005 to the present), there have been no toxic measurements exceeding those in standard natural environments (the air, surface water, or snow) related to the facility's operations, which is confirmed by the results of an analysis conducted by the laboratory at the State Environmental Control and Monitoring Regional Center (SRECMRC) in the Udmurt Republic, and industrial environmental monitoring efforts conducted by the Nature Conservation Service staff at CWD Facility No. 1203.

Based on the results of the monitoring efforts, the state of the environment in the CWD facility's industrial zone, the health protection zones (HPZs) and emergency planning zones (EPZs) is stable, and there have been no instances in which standard environmental indicators were exceeded.

An analysis of the health of residents living in the CWD facility's EPZ, based on an extensive medical survey conducted over 2006–2008, shows that as a whole, the health problems that have been identified are related to age and poor living conditions. Any deviations noted in the population living in the EPZ match the average indicators for the entire Udmurt Republic and are not related to the CWD facility's operations.

In 2008, the Russian Federal Accounts Chamber conducted an audit of the lawfulness, the intended and actual use of federal budget funds and international aid allocated in 2007 and 2008 to the destruction of CW stockpiles at Facility No. 1203.

In October this year, the Commission of the Control Department under the Russian President's authorized representative in the Privolzhye Federal Okrug also conducted an audit with the local federal executive authorities and the executive authorities of the Udmurt Republic in order to examine the federal law provisions and Russian President's decisions aimed at resolving environmental safety issues, including at the CW storage and destruction facilities in the village of Kizner and the town of Kambarka.

Based on the results of these audits, it was established that no violations have been committed by the CWD facility or the federal control and supervisory bodies monitoring the CWD facility's operations.

The results of these audits were submitted to the government of the Udmurt Republic.

Recommendations for the Republic's leaders concern the drafting of proposals for converting (re-profiling) the CWD facility after it is phased out of operation, equipping and staffing a medical and diagnostic clinic, adding emergency services staff and equipment to the Central Rayon Hospital, and replacing expired antidotes stored at the hospital.

According to the government's plans, in the first quarter of 2009, it will complete the lewisite destruction process at the CWD facility in Kambarka, which will mean that the local residents of the town and rayon will no longer have to share their space with chemical weapons. There will be a temporary stage during which the facility is phased out of operations and contaminated areas near the CW storage and destruction facilities

are cleaned. The conversion (re-profiling) issue, as it concerns the property and buildings of the former CWD facility, is complex and requires a legislative solution.

Meanwhile, only the residents of the Kambarka Rayon themselves can truly evaluate the facilities and projects that have been built using federal budget funds to develop the Kambarka Rayon (a gas main, roads, schools, utility systems, boilers, etc. — the results of over one billion rubles in capital investments). Construction is still underway, and the government has assured us that the budgeted funds will be used in full.

Thank you for your attention!

Regional Aspects of Chemical Weapons Destruction in the Bryansk Oblast



Vasiliy Snitsarenko
Chairman, Bryansk Oblast Duma Committee on the Consequences of the Chernobyl Accident, the Environment, and Natural Resource Management

Mr. Baranovsky, and Dialogue Participants! First of all, please allow me to express my gratitude to the organizers for the opportunity to participate in this Dialogue.

The Bryansk Oblast Duma is dedicated to monitoring issues related to the Russian Federation's compliance with the requirements of the Chemical Weapons Convention (CWC), especially because the Bryansk Oblast is home to the largest stockpile of chemical weapons in Russia, and construction of facilities to destroy these weapons is underway.

Everything related to the Pochep chemical weapons (CW) stockpile is viewed as vitally important for the residents of the Bryansk Oblast, which has already felt the effects of the Chernobyl Nuclear Power Plant accident, when over 11,000 square kilometers of the land and over one thousand villages and towns, and one-third of the oblast's population were exposed to radiation pollution. Approximately 50,000 people were resettled from polluted areas. That figure should be several times higher, but the lack of funding for the Chernobyl program has meant the end of resettlement efforts.

The Chernobyl accident resulted in a full range of grave environmental, medical, and demographic consequences and struck a major blow to the oblast's socioeconomic development. It has had a major, long-term negative impact on economic, social and political aspects of life there.

But even with the challenging legacy of Chernobyl, we are confident that the Russian Federation will fulfill the commitments it has made under the CWC. The position of the Bryansk Oblast Duma is firm: it is dangerous to stockpile chemical weapons and they must be destroyed, but the destruction process must also be safe and conducted in concert with the necessary measures of social protection for the population. Furthermore, the social infrastructure of the areas affected by the storage and destruction of CW must be developed.

Having voiced its unwavering position on the need to destroy CW stockpiles in the oblast, the Bryansk Duma keeps a close eye on the government to ensure that the oblast's residents receive guarantees against negative consequences similar to those stemming from Chernobyl.

In line with the Federal Law on Chemical Weapons Destruction (CWD), the requisite statutory legal acts have been adopted both at the federal and regional levels. This facilitates efforts toward the construction of a CWD facility in the Pochep Rayon.

At present, the general contractor for the construction project (SpetsStroi Russia) continues to work on the CWD facility, which is scheduled to become operational in late 2009.

Despite the massive scale of the work underway, we would like to draw the attention of the government to the quality of the work being performed, which should be nothing less than excellent. Furthermore, the project should not be rushed to meet the final deadline, but should only be launched once it has been established that the facility is in prime condition for safe operations.

In June this year, a number of important events took place that marked the beginning of the chemical disarmament program in the Bryansk Oblast: the keystone was laid in the foundation of the thermal decontamination building for reaction masses, liquid waste and solid waste produced by the new CWD facility; international inspections buildings were made operational; and a State Environmental Control and Monitoring Regional Center (SECMRC) was opened.

The chemical disarmament program also envisages the accelerated development of the public works and infrastructure projects in the rayon affected by CWD, including the construction and repair of buildings, structures, utility services and residences, at a cost of up to 10% of the total funds earmarked for the project. Government Order No. 679 (September 12, 2008) amended the Federal Target Program (FTP) for the Destruction of Chemical Weapons in the Russian Federation (the CWD FTP). Under these amendments, the value of the CWD facility in the Pochep Rayon (Bryansk Oblast) has been set at RUB 12.857 billion, which is higher than the initially budgeted amount. We are determined to ensure that financing for social infrastructure projects is increased in equal proportion.

In 2002–2008, under the social development subprograms for the Pochep Rayon, new apartment buildings (featuring 60 and 70 apartments each) opened their doors, and repairs were made to the infectious diseases ward of the Central Rayon Hospital. Other accomplishments include connecting over 40 villages and towns in the Pochep Rayon to a stable gas supply (over 3,000 homes). Current projects include the construction of a set of buildings for the Central Rayon Hospital in Pochep.

At present, the construction of a new school in Pochep, which will accommodate 768 students, is nearing completion, and the city is launching new treatment facilities with sewage collectors. Construction plans for the future include a health and fitness center, repairing the community center, roads, and other facilities. In 2009, social infrastructure development projects will continue in the Pochep Rayon under the chemical disarmament program.

The chemical disarmament program also involves creating a system for monitoring the environment and the health of local residents who work with chemical weapons and those who live and work in emergency planning zones (EPZs) near the CWD facility. Monitoring efforts will help provide a clear and accurate picture of the health of the population and the state of the environment, both prior to the construction of the CWD facility and during its operations.

Organizing medical examinations for local residents in EPZs is in full swing, from evaluating baseline health and environmental conditions of the facilities used to monitor the health and living conditions of local residents while the facility is running and after the CWD process has been completed.

I would like to point out that before the consultation and diagnostics clinic was made operational, planned examinations of certain groups of children and adults have been conducted by the Federal Medical-Biological Agency of Russia and health institutions in the Bryansk Oblast. As of March 2007, examinations have been conducted on-site at

the center. In early October 2008, comprehensive medical examinations were provided to 14,500 people, including 7,500 children, among the total 32,200 people living in EPZs. The accelerated pace of health monitoring will help provide examinations to all EPZ residents before the CWD facility is made operational.

In order to improve the effectiveness of the CWD FTP and the Federal Law on CWD in the Bryansk Oblast, the oblast Administration has passed a decree instituting the Interagency Commission on Chemical Disarmament, which is a coordinating body for reviewing and preparing proposals and recommendations on the organization and implementation of chemical disarmament efforts in the oblast. Of the 31 members of the commission, seven are deputies of the Bryansk Oblast Duma who are directly and personally involved and interested in the commission's goals.

The Duma's standing Committee on the Consequences of the Chernobyl Accident, the Environment and Natural Resource Management and the deputies of the oblast Duma are constantly tracking issues related to the Bryansk Oblast law on ensuring safety and protection for the population and the environment of the Bryansk Oblast during the chemical disarmament process.

I would like to take advantage of this opportunity to refocus the government's attention on the ultimate fate of the CWD facility. After the CWD FTP is completed, the facility will be converted into a general industrial facility. There is not much time left before the final decision is made, and we believe that the government needs to take this issue to the federal level now in order to prepare a specific solution for this problem with due account of the needs and interests of our region.

With the start of operations at the facility approaching, one of the priorities of the program is fostering a positive opinion about the CWD process among the local residents. A substantial contribution to the oblast authorities has been made by the Green Cross Russia Public Outreach and Information Offices (POIOs) in the towns of Bryansk and Pochep toward educating the local residents. I would especially like to note the productive work of the POIOs in Bryansk, led by Ivan Bulatny, PhD, a forestry expert, and by Vladimir Korzanov in Pochep.

These centers play an important role in laying the foundation for mutual understanding and cooperation among the government, the executive authorities, public organizations and the people of the Bryansk Oblast. Thanks to the focused efforts of these parties, there is no fear of the CWD process, and local residents have a positive view of CWD.

The oblast Administration and the oblast Duma would like to express their gratitude to the management of Green Cross Russia for their focused work and their comprehensive approach to resolving the problems associated with chemical disarmament; we hope to continue working together on a number of projects that are important for the Bryansk Oblast.

Please allow me to say a word of thanks on behalf of the oblast Duma and the residents of the Bryansk Oblast to the governments and countries that make up the Organization for the Prohibition of Chemical Weapons for their financial and material assistance in building the CWD facility in Pochep. I would also like to voice my wish for more proactive collaboration toward the total destruction of all chemical weapons in Russia.

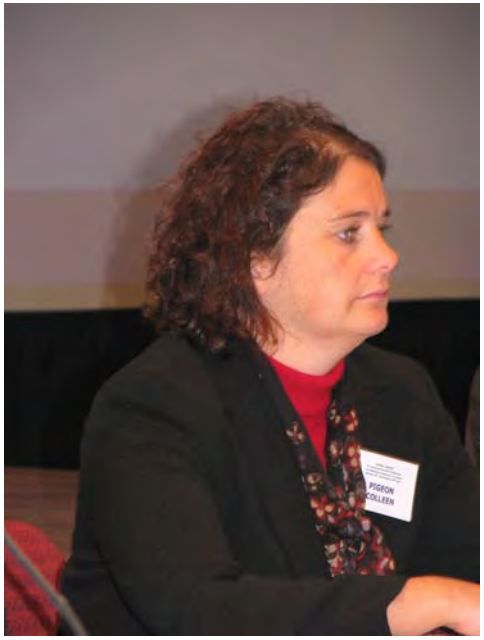
Thank you for your attention.



A medal for cooperation in chemical disarmament, awarded by the Federal Department for Safe Storage and Destruction of Chemical Weapons of the Russian Federation.



Andrey Shevchenko



Colleen Pigeon



Vladimir Ladanov



Fyodor Rusnak

Dialogue Participants in Session







Krzysztof Paturej



Paul Walker



Ivan Manilo



James Harrison



Left to right: Serguei Meshkov, Lyudmila Dobrynina, and Sergey Stadnikov



Tamara Ashikhmina and Valery Demidyuk

Demonstration in Shchuch'ye on October 25, 2005



"Government! Where are our privileges and compensation?"
"Give us!!!! Water, heating, and sauna."



"Those who are against the facility,
are against Russia's interests!"

Implementing an Environmental Education System for Residents of a Future Emergency Planning Zone



Sergey Martianov
Head, Kotel'nich Rayon, Kirov Oblast
Chairman of the Kotel'nich Duma

The city of Kotel'nich and four communities in the Kotel'nich Rayon of the Kirov Oblast are part of the Emergency Planning Zone (EPZ) associated with the chemical weapons destruction (CWD) facility. The proximity of these communities to this kind of facility has caused a high level of anxiety among the local residents, making the education and training efforts by the local authorities one of the important objectives of public outreach. We receive all of the necessary information and support from the Chemical Weapons Convention Department of the Kirov Oblast government, the Green Cross Russia Public Outreach and Information Office (POIO) in Mirny (Orichi Rayon), the Kirov Oblast State Environmental Control and Monitoring Regional Center (SECMRC), and other involved organizations.

Our public outreach objectives are to:

1) shape a constructive public opinion of the need for CWD and the need to find solutions to issues that arise in connection with CWD;

2) pool our efforts with a variety of non-governmental and government entities to discuss this topic, and achieve maximum transparency in how the corresponding information is presented and how mutually acceptable decisions are made; and,

3) carry out practical assessments of the territories that are part of the EPZ and monitor their condition.

In working toward our first objective, we are guided by two principles**:** a) fostering the idea in the minds of local residents that there are more advantages to CWD than disadvantages. Potential danger is not inevitable danger; b) ensuring that the concerns of the residents over facility operation do not go beyond the boundaries of the EPZ. However, the residents of the EPZ should be compensated for the psychological discomfort resulting from their concerns and the potential risks they face in the form of a broad range of public works and infrastructure projects.

So what are the advantages of close proximity to a CWD facility? The first advantage is employment. Twenty men from just one village in the area, Leninskaya Iskra, work at the facility. All told, 370 people (including turnover statistics) from the city and the rayon were employed at the facility in 2007, according to the local employment bureau. Morning trains heading to Kirov from Kotel'nich are full, but they empty out in Mirny and Orichi. Consider the fact that 370 people for a town and surrounding area with a total population of under 50,000 is a very significant percentage. We are talking about 370 families with children having food on their tables.

The second advantage is the continuous monitoring of the environment, public health, public opinion, and other issues.

The third advantage is the development and implementation of the latest technologies, which will ultimately be redirected to serve the needs of industrial enterprises in the Kirov Oblast.

The fourth advantage is the allocation of funds for public works projects. In the case of Kotel'nich, these included a new water main and a diagnostics center. In Orichi, we visited an excellent, well-equipped clinic, a new school, and apartment buildings being built as part of this program. Unfortunately, progress always comes with some negative consequences, but there are many more advantages and we can keep listing them. The price we pay for the newly acquired comforts is relative psychological discomfort.

We are striving to reach our second objective by working actively with the local branches of NGOs. A Citizens' Advisory Commission (CAC) was formed under the head of the Kotel'nich Rayon Administration many years ago and meets at least five times per year. The CAC has hosted multiple roundtable discussions, trips to conferences, tours of the CWD facility (with the help of the agencies mentioned earlier and the GCR POIO), and other activities. The press regularly covers all such events. The newspaper *Kotel'nichesky Vestnik* covers the events and Anatoly Vylegzhanin, the assistant editor, ensures that the paper regularly provides information about the CWD facility. Special issues of *Izvestiya* often include memos from the head of the rayon administration, the top public outreach official, and community leaders from villages within the EPZ. Bulletins published by the GCR POIO in Mirny and the Public Relations Group (PRG) of Military Unit No. 21228 serve as great resources in our work with the residents of small rural communities and are distributed to all rural administrations and schools. The GCR POIO hosts monthly seminars on CWD topics and invites administration officials, public health workers from local medical establishments, library staff, teachers, and school principals to attend, depending on the topic at hand.

In 1998, the Spitsyn public school was designated by the oblast's Department of Education as the standard bearer for continuous environmental education in the Rayon. The school's Environment Council is developing a strategy for studying natural environments and working with other schools, continuing education institutions in the area, and, last but not least, the parents, to develop an understanding of environmental protection and conservation issues. The students compiled environmental data for their town and two papers made it into the 2007 collection published by the Mirny GCR POIO under the title "Young Environmentalists Study Their Homeland." The collection was edited by Professor Tamara Ashikhmina, PhD, Research Director of the State Environmental Control and Monitoring Regional Center (SECMRC) of the Kirov Oblast CWD facility. The same collection included an article on health improvement measures being taken at the Yubileiny public school, also in the Kotel'nich Rayon. Needless to say, the influence a school has on parents, as a source and promoter of positive information, cannot be overestimated.

We've come to the third objective we have set before ourselves. Several health organizations from Kirov, Moscow, and St. Petersburg, independently of one another, conducted a public health assessment of the local population. In 2007, the municipal clinic conducted a broad month-long study to evaluate the health of the adult population. In early 2008, at the initiative of Tamara Savinykh, the head of the Birtyaev community, and parental support, a group of researchers from Children's Clinical Hospital No. 38 in Moscow conducted an assessment of young children and teens, followed by the treatment of thirty individuals. However, all of the assessments came to the same conclusion:

morbidity rates in Kotel'nich and the Kotel'nich Rayon do not exceed oblast or national averages for indicators pertaining to exposure to chemical agents.

Many dangers lurk in our daily life. Tens of thousands die every day around the country in traffic accidents alone. The railroad that passes through our town is in and of itself a much greater potential danger than the CWD facility, which is tightly guarded and operates according to plan. This has been mentioned frequently at seminars and by the heads of various Orichi communities. Similarly, many plants manufacturing household goods and food products use chemicals such as ammonia and hydrochloric, sulfuric, and other acids in their processes and thus pose a much greater potential threat at this time.

This does not mean that we can relax and stop taking preventive measures. For this reason, much of our attention has been directed at teaching the local population about emergency preparedness. In 2007 and 2008, a series of emergency preparedness exercises involving the surrounding rural communities and local authorities were conducted here. The hypothetical scenario of a plane crashing into a hazardous facility was used to practice evacuation and use of gas masks that had been distributed to the residents. The exercises in the Kotel'nich Rayon Administration received high marks around the oblast. Twice per week, the public address systems are tested in the town and in the rural communities. Emergency protection measures for the rural communities underwent an assessment by experts and were approved by the local office of the Civil Defense and Emergencies Department, while the corresponding set of emergency measures for the rayon were approved by the Civil Defense and Fire Safety Department. We discussed the substance of this set of measures several times in the *Kotel'nichesky Vestnik*.

In the last year, the efforts described above have significantly reassured the public, and the general mood has become at least neutral if not positive, instead of sharply critical and negative as it was in the past. Residents have come to understand that aging chemical weapons stockpiles must be destroyed sooner or later and that the cost of storing them is too high, in every sense of the word. We are convinced that our dialogue with all public institutions will continue in a constructive manner toward the ultimate goal of achieving broad support.

Environmental Monitoring of Safe Chemical Weapons Storage and Destruction in the Udmurt Republic in 2008



German Frizorger
Head, Center for Environmental Monitoring and Information,
Ministry of Natural Resources and Nature Protection,
Udmurt Republic

So far this year, environmental monitoring of the area around CWD Facility No. 1203 has been conducted in accordance with approved procedures. Pollutants in industrial emissions were monitored according to a schedule defined in the 2008 state environmental monitoring plan for pollution sources at CWD Facility No. 1203 and environmental monitoring at specific sources (0006, 0007, 0008, 0009, 0010) in the health protection zone (HPZ) and emergency planning zone (EPZ).

Based on waste product monitoring results for CWD Facility No. 1203, maximum allowable emissions (MAE) were not exceeded. The findings of state monitoring of set emissions standards indicate that the facility is operating under normal conditions.

Samples of wastewater at the Kambarka treatment plants were analyzed for 13 indicators, and quantitative chemical analyses (QCA) of the collected samples were conducted. Allowable emissions standards were exceeded for phosphates, biological oxygen demand (BOD), and nitrites. Wastewater was sampled as required by state monitoring guidelines. The list of monitored components is approved by the Udmurt Republic State Environmental Control and Monitoring Regional Center (SECMRC) for the Kambarka CWD facility and the surrounding area. The wastewater was found to have significantly elevated levels of nitrates and phosphates and tests revealed a high toxicity level. No toxic agents were found.

Natural groundwater was also tested. Due to lack of evaluation criteria for natural groundwater quality, we compared this year's results with the results obtained in 2006. Specific compounds (2-chlorovinylarsenous acid, arsenic ions) were below the detection levels of the methods being used. During biological testing, none of the samples indicated a high toxicity level. There was no observable impact of the CWD facility on water quality in the monitoring wells and the concentrations of monitored specific compounds have been stable over the last three years.

Monitoring of air pollution is conducted in order to detect and evaluate the amount and distribution of pollutant concentrations in the HPZ and the EPZ of the CWD facility, as well as to determine the fluctuations of pollutants in the facility's HPZ and EPZ over an extended period of time (one month to one year). Monitoring air pollution involves measuring pollutant concentrations underneath the plume while taking into account the weather conditions and the rate at which industrial emissions from the CWD facility are being released into the atmosphere. An analysis of the results showed that at all sampling sites, the content of monitored pollutants in the air was below the detection levels of the methods being used. No toxic agents were found.

Water quality monitoring was conducted in the prescribed manner. Natural water

was tested for general indicators, used to assess the state of natural waters, and for specific pollutants that could potentially enter natural water reservoirs and sources during operations at the CWD facility (heavy metals, arsenic, chromium). An analysis of the obtained results showed that the content of specific monitored pollutants in the samples collected at monitoring sites does not exceed the set standard for environmental quality (in mg/dm^3 (MAC during normal operations)). No toxic agents and products of the CWD destruction process were found. Most of the surface water samples from the Kama, Buy, and Kambarka rivers, were found to have a high level of toxicity on infusion (the toxicity index was within the range 0.90±0.26 to 0.97±0.28), associated with a period of high temperatures in July–August, 2008 and the resulting heating of the surface waters and low dissolved oxygen content.

In order to evaluate the impact of wastewater on the condition of the Kama river basin, water samples were drawn and a quantitative analysis of the natural surface water samples was conducted near the discharge area. Samples were drawn at monitoring sites located 500 meters upstream and 500 meters downstream along the Kama River. An analysis of the results indicated that the content of monitored substances in these samples did not exceed the set standard for environmental quality (in mg/dm^3 (MAC during normal operations)). The content of arsenic in monitored samples was below the detection levels of the methods being used and significantly lower than allowable concentrations.

Tests conducted on collected soil samples indicated elevated arsenic content in soils compared to defined MACs (10 mg/kg) at 17 sampling sites. Background values were exceeded at nine monitoring sites, and a number of elevated chromium content values were noted as well. Biological testing methods did not reveal any extreme toxicity values of the samples. Lewisite, lewisite oxide, and 2-chlorovinylarsenous acid content was found to be below the detection levels of the methods used.

Sediment sample tests showed that arsenic content was at background levels. No monitored compounds were found in the tested samples. Test results did not show a single instance of high toxicity levels.

In 2008, biological monitoring began at the HPZs of Kambarka Facility No. 1203 and Kizner Facility No. 1596. The following monitoring activities were conducted:

Kambarka

A biological monitoring program was developed for the area surrounding the CW storage and destruction facility in Kambarka. By the end of the field testing period, all planned field tests were completed, all of the necessary data on the state of the environment and facilities in the region were obtained and examined, all identified biological monitoring sites (22 of them) were mapped and described, and records of environmental data were compiled for all monitoring sites, including a description of the flora (including tree species), fauna, results of hydrobiological studies (at water sites), soil enzyme activity (at dry-land sites) and soil mesofauna.

Kizner

A biological monitoring program was developed for the area surrounding the Kizner CWD facility. The program is being executed in line with a government contract dated August 28, 2008 for the development of a biomonitoring program of the area affected by the CWD facility in Kizner in the Udmurt Republic, the placement and securing of monitoring sites around the area, and biota sampling at the selected sites.

By the end of September, the following stages of the project had been completed: a biomonitoring program for the area surrounding the CWD facility was created; monitoring sites were identified and then adjusted taking into account conditions on the ground; monitoring sites were marked, photographed, and coordinates were taken using GPS navigation; two visits to Kizner Rayon were made, and all 33 sites to be used for annual biological monitoring were registered.

In all, control and monitoring tasks for CWD Facility No. 1203 in Kambarka and HPZ monitoring were completed in full within the original deadlines and in line with approved procedures. In 2008, environmental monitoring was carried out for the HPZ of CWD Facility No. 1596.

The existing temporary system consists of 28 monitoring sites, including four sites for testing atmospheric air, four sites for monitoring water quality (natural surface water), and 22 soil quality monitoring sites.

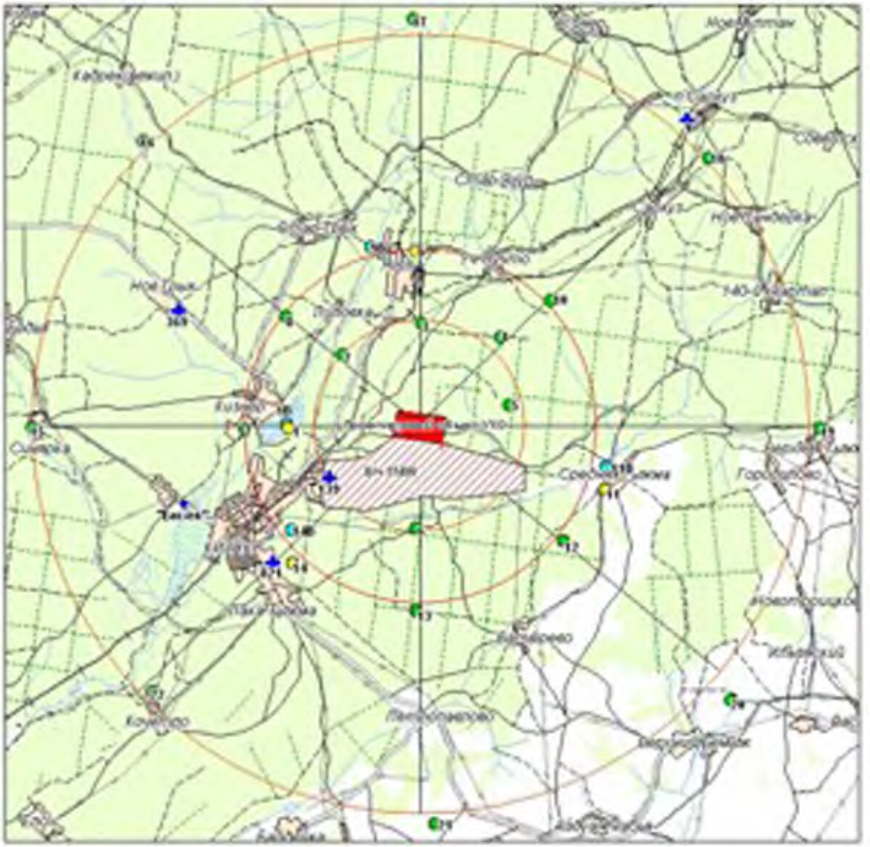
Soil sample analyses revealed elevated arsenic content compared to standard MAC (10 mg/kg) at seven monitoring sites. There were several cases of elevated chromium and nickel content in the soil. An assessment of pollution in the area showed that the concentrations of pollutants were typical for areas affected by long-term industrial activity.

Natural water quality and the state of river sediment were assessed based on the content of monitored substances (arsenic and methylphosphoric acid) as well as known industrial pollutant compounds. An analysis of the results showed that the content of monitored pollutants in the samples did not exceed the environmental quality standards (in mg/dm^3 (MAC during normal operation)). Toxic agents and by-products of the CWD destruction process were not found. Two of the samples were found to have an insignificantly elevated concentration of copper, which is common in this particular region. A high toxicity level was found in all of the samples.

Air quality testing included a quantitative analysis of substances specific to the facility: phosphorus (V) compounds (phosphorus anhydrite and phosphoric acid) as well as common industrial pollutants such as nitrogen (II, IV) oxides. An analysis of the results showed that for all monitoring sites where air samples were collected, the content of the pollutants was below the detection levels of the methods used (below the standard MAC (Tentative Safe Exposure Level)).

Sampling Sites in the Kizner Rayon

Scale 1:150,000



Legend

- Soil sampling sites
- Air and soil sampling sites
- Natural surface water and sediment sampling sites
- Freshwater spring (groundwater sampling site)
- Monitoring well (groundwater sampling site)

The Shchuch'ye Duma's Work to Shape a Positive Public Opinion of the Federal Target Program for Chemical Weapons Destruction in the Russian Federation



Andrey Botov
Chairman of the Shchuch'ye Duma, Kurgan Oblast

Dear Dialogue Participants. As a Deputy and Chairman of the Shchuch'ye Rayon Duma, I am all too familiar with the problems involved in implementing the Federal Target Program for Chemical Weapons Destruction (the CWD FTP). I would like to remind everyone that one of the expected results of the completion of the CWD FTP is the formation of a positive opinion among the public and public organizations with regard to the chemical weapons destruction (CWD) process.

The work of the Shchuch'ye Rayon Duma depends on the cooperation of Duma deputies at meetings, discussions with the public, visits with the electorate, and reports to the electorate.

In order to improve the Duma's productivity, deputy commissions have been established. These commissions convene before Duma meetings in order to give preliminary consideration to issues submitted for review by the Duma. Considering the peculiarities of the Shchuch'ye Rayon as a place where chemical weapons (CW) are currently stored and where they will be subsequently destroyed, a CWD Commission has been formed and is chaired by Deputy Dilyara Akhatova.

At the first stage of carrying out the CWD FTP, the top priority for the local residents was the safety of the CW storage and destruction process. The lack of complete information about the CWD process and the impact it could have on the health of local residents and the environment were major factors. A large role in satisfying the "hunger" for information was played by the Green Cross Russia (GCR) Public Outreach and Information Office (POIO), which opened in May 1997 in the town of Shchuch'ye. Our residents trust the POIO staff members. Public outreach is equally crucial today as the CWD process begins; the public has many new questions and the range of interests is expanding.

As it performs its duties, the Duma must take into account the interests of the people. In their appeals, voters have indicated that their biggest concern with regard to the implementation of the CWD FTP is the construction and completion of public works and social infrastructure projects for the rayon, which are meant to be financed with government funds. The residents associate the CWD FTP with improved living conditions, comfort, and safety in the Shchuch'ye Rayon. This is why the Duma's efforts are focused on oversight of the public works and infrastructure projects at the level of the Rayon Duma deputies, who keep track of what is under construction, what is slated for construction, and the quality of construction. Before construction even began, the government representatives promised the residents of the rayon that the gas supply,

water supply, sewage system, roads, etc., would be improved — things that aren't exactly considered luxuries in the 21st century. Unfortunately not all of these promises have been kept. The residents have complained — and rightly so — about the quality of the construction, the delivery deadlines that have been missed, and the lack of proper procedure throughout the construction process.

The construction of public works and infrastructure projects falls within the scope of responsibility of the Shchuch'ye Rayon Duma. A review of the construction process resulted in the Duma passing Ruling No. 192 (August 28, 2007) on implementing the CWD FTP in the Shchuch'ye Rayon (Kurgan Oblast) in terms of the construction of public works and infrastructure projects. This Ruling acknowledged the unsatisfactory quality of the construction of public works and infrastructure projects. The Duma deputies believe that the most important aspects here are not only to bring attention to the problem, but also to find a suitable solution. In order to accomplish this, efforts are being pooled with other participants in the CWD FTP. In the autumn of 2007, the Accounts Chamber of the Russian Federation conducted an audit in the Shchuch'ye Rayon. The auditor also involved the Chairman and Vice Chairman of the Shchuch'ye Rayon Duma in the audit process. The results of the audit can be reviewed in Accounts Chamber Report No. 50K (November 23, 2007), which indicates that the following projects have not been completed:

- the gas main meant to supply the town of Shchuch'ye has not been hooked up
- the construction of the sewage system has not been completed
- no efforts have been made toward city beautification.

The main reason provided as to explain why construction deadlines were missed was the lack of design documentation that had been properly approved in a timely manner.

It is no accident that the Duma deputies are focusing on these issues: they are referred to the Shchuch'ye Rayon Duma by Federal Law No. 131 on the general principles of local self-government in the Russian Federation, which has been in full force in the Kurgan Oblast since January 2006. These bodies of local self-government represent the interests of their citizens, and that includes finding a solution to vitally important issues of local significance.

I would like to also say a few words about safety. There is no way to skirt the issue of the appropriate implementation of public evacuation plans in the event of a CW-related emergency when we can plainly see that our roads — the evacuation routes — are in a sad state. We can only welcome the fact that the growing economy requires heavier transportation, but the closed-off railway crossing has the public concerned. This could become a major obstacle should the residents need to evacuate the area, have access to urgent medical care or should firefighters need to reach a fire or police officers get to a road accident. Resolving these issues requires the efforts of everyone involved.

I would also like to note that the Duma deputies are indeed striving to improve collaboration with the command of Military Unit No. 92746, the government representative for CWD FTP issues, by inviting them to attend Duma sessions. We believe that an open, constructive dialogue among interested parties can help solve a number of problems. Colonel Khaibulin, the Commander of Military Unit No. 92746, and Colonel Serbin, the representative of the Federal Department for the Safe Storage

and Destruction of Chemical Weapons (FUBKhUKhO), both spoke at the last Duma session on September 24. They spoke about their vision for resolving the public works and infrastructure projects' construction, and they invited the Duma deputies to attend a roundtable discussion together with the newspaper *Rossiiskaya Gazeta*. On October 8, after an engaging discussion attended by the mass media representatives, and government and relevant agency officials, an invitation was offered to tour the facility. The deputies were thus able to personally witness the high level of quality of the construction process underway for the CWD facility, and the attention and care given to quality, which will have a direct impact on the safety of the facility's operations. Naturally, this CWD facility is crucial for the economy of the entire region and as a tax source for budgets at a number of administrative levels.

Mr. Bogomolov, the Governor of the Kurgan Oblast, is very involved in the construction process. In keeping with a construction agreement between the Kurgan Oblast Duma and the Shchuch'ye Rayon Duma, work is underway to draft proposals for preparing certain statutory acts. The Oblast Duma deputies are attending Rayon Duma sessions and holding on-site meetings for the relevant committees in the Shchuch'ye Rayon. At the initiative of the Shchuch'ye Rayon Duma deputies, a proposal has been submitted to the Kurgan Oblast Duma lobbying in favor of amending Russian Federal Law No. 76-FZ on CWD and clarifying the social guarantees made to the citizens residing in EPZs. This initiative has found genuine understanding and support among the residents of the Shchuch'ye Rayon.

The Shchuch'ye Rayon Duma works together with the public organizations in the rayon, including with the Citizens' Advisory Commission (CAC) led by the Head of the Rayon for CWD issues and the Public Chamber of the Shchuch'ye Rayon.

The facility is scheduled to begin operations in December. The arrival of highly-qualified specialists will increase the rayon's group of intelligent, educated people who make greater demands of life. It probably wouldn't be too far-fetched to expect that Shchuch'ye will become something of a cultural center, but unfortunately the town itself does not have a recreational center where people could relax and enjoy themselves or engage in self-improvement.

We welcome the fact that discussions are taking place about the re-profiling of the facility once it has performed its functions under the CWD FTP. We hope that with help from scientists, a suitable solution will be found. We are counting on the converted facility to be involved in a competitive manufacturing business.

As a resident of the Shchuch'ye Rayon, the location of a hefty chemical weapons stockpile, I would like to express my thanks to the organizers of today's Dialogue for the opportunity to take part in the discussions of issues pertinent to the CWD FTP.

Thank you for your attention.

Constructive Cooperation among the Participants of Chemical Disarmament: An Important Factor in Eliminating Social Tension



Ivan Manilo
Director, Kurgan Public Outreach and Information Office
Green Cross Russia

"He who does not know melancholy and sorrow
Does not love his Motherland!"
— Nikolai Nekrasov

Ladies and Gentlemen, colleagues and comrades (whichever you're more comfortable with)! Today is the Tenth National Chemical Disarmament Dialogue. This year — just as in previous years — the Dialogue is dedicated to following Russia's progress on meeting its obligations under the Chemical Weapons Convention (CWC). I have taken part in all ten of the Dialogues and I believe that these events are important, especially on a sociopolitical level.

No matter the aspect of chemical weapons destruction (CWD) addressed in my Dialogue talks (presented at eight of the ten Dialogues), or my lectures, or in discussions, I never tire of saying: "The destruction of chemical weapons with unconditional safety for people and the environment is an extremely complex problem that presumes the accomplishment of tasks in a number of different key areas: scientific, technical, production, technology, the economy, socio-psychological, medical, and political." The students that attend my lectures on CWD already know that each lecture of mine always begins with those same words. They have already memorized the speech and they begin their answers to questions about CWD in the same way. Why am I talking about this? I am convinced that the relevance of the CWD problem never diminishes with repetition, in the same way that repetition does not take away from prayer or a good toast!

We might imagine that the bravery and determination of the scientists and experts to whom the government and society entrusted the problems of CWD inevitably bring about certain inaccuracies and errors. And that is only natural! In turn, in addition to the very real achievements that have been made under the CWC, there are also some very real flaws. Even with all of the important things that have been achieved that have laid a foundation and given us faith that Russia will meet its obligations under the CWC by April 29, 2012, there are still problems and omissions that upset the people and society and that give rise to social and psychological tension in the areas near the Shchuch'ye CWD facility.

Without any doubt, over the years since the information about the enormous stockpiles of deadly weapons in the Shchuch'ye Rayon was made public, the social and psychological situation in the area has changed considerably. People understand that the rayon, and to a large extent the emergency planning zones (EPZs), remain a

zone of increased health risks for people. The start of public outreach efforts in the rayon was marred by the lack of any prior experience with public outreach, a lack of information, the media's tendency to exaggerate the negative or to distort certain facts and aspects of safe CW storage and destruction. This led to the perpetuation of a variety of negative fabrications, myths, and rumors. In concert with the complex socioeconomic and environmental conditions in the rayon, this has given rise to dissatisfaction among most of the local population, which in the end only provoked and continues to provoke the intensification of social tension in the area.

The process of forming public opinion took place and continues to take place under the influence of a great number of factors (see Fig. 1).

The conditions that have taken shape have clearly justified the need to prepare and carry out a practical science-based and substantiated public outreach program, which would incorporate efforts with all social classes and age groups. Such a comprehensive program was developed and is being carried out by Green Cross Russia (GCR) and its regional offices.

The components of this program are:

- public outreach and consultation with the local population;
- monitoring the social and environmental health of the local population;
- analyzing public opinion in the area; and
- continuous monitoring of public sentiment, circulating unofficial information, the press and the media using, for example, social monitoring methods.

Under this program, the key functions and activities of GCR's Public Outreach and Information Offices (POIOs) were defined (see Figs. 2 and 3).

No matter what we say, the situation in the regions affected by CW storage and destruction will continue to be the result of the social and environmental health of the population, first and foremost among those who live next to CW storage and destruction facilities.

There are a number of crucial tasks that must be completed in analyzing and assessing the social and psychological health of the local population. The importance of these tasks must not be dismissed (see Fig. 4).

It is no coincidence that GCR developed and continues to develop and implement a number of programs meant to boost the comfort of those living in the Shchuch'ye Rayon. These programs include conducting sociological and medical research, arranging for treatment, and organizing recreational activities for children and teenagers.

All of these years, my colleagues from GCR and the Public Relations Group (PRG) and I have been speaking about the public outreach efforts that are currently underway. We provide figures about the number of people visiting POIOs, the number of incoming phone calls, the kind of questions that are asked — and 90% or more of these are the same across all regions. Representatives of the military and other government agencies, including law enforcement and local executive authorities, also provide statistics on how funds are being used, data about the facilities and other projects that have been built or are currently under construction, and they also make requests to increase funding and other issues concerning utilities and other social services. This is all logical, as these are the most pressing issues at hand.

Figure 1

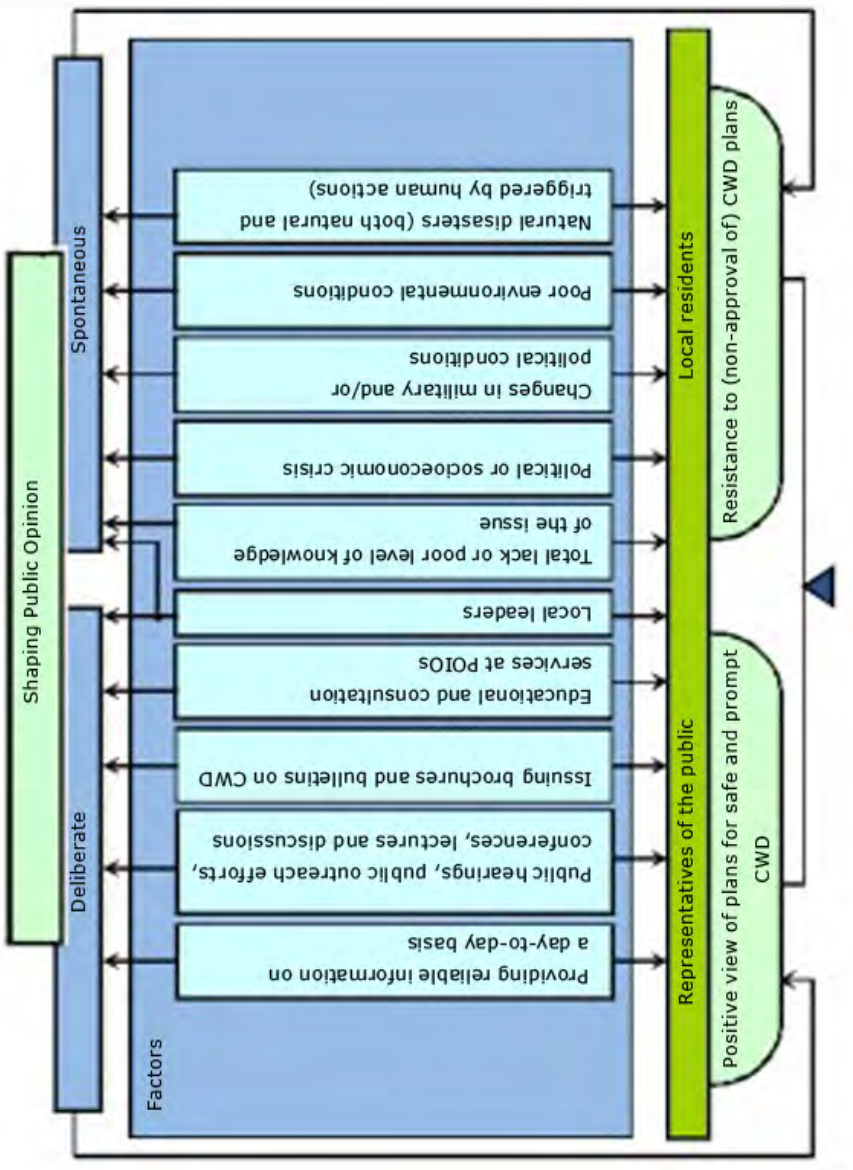

Shaping Public Opinion
Spontaneous
Deliberate
Factors
Natural disasters (both natural and triggered by human actions)
Poor environmental conditions
Changes in military and/or political conditions
Political or socioeconomic crisis
Total lack or poor level of knowledge of the issue
Local leaders
Educational and consultation services at POIOs
Issuing brochures and bulletins on CWD
Public hearings, public outreach efforts, conferences, lectures and discussions
Providing reliable information on a day-to-day basis
Representatives of the public
Local residents
Resistance to (non-approval of) CWD plans
Positive view of plans for safe and prompt CWD

Figure 2

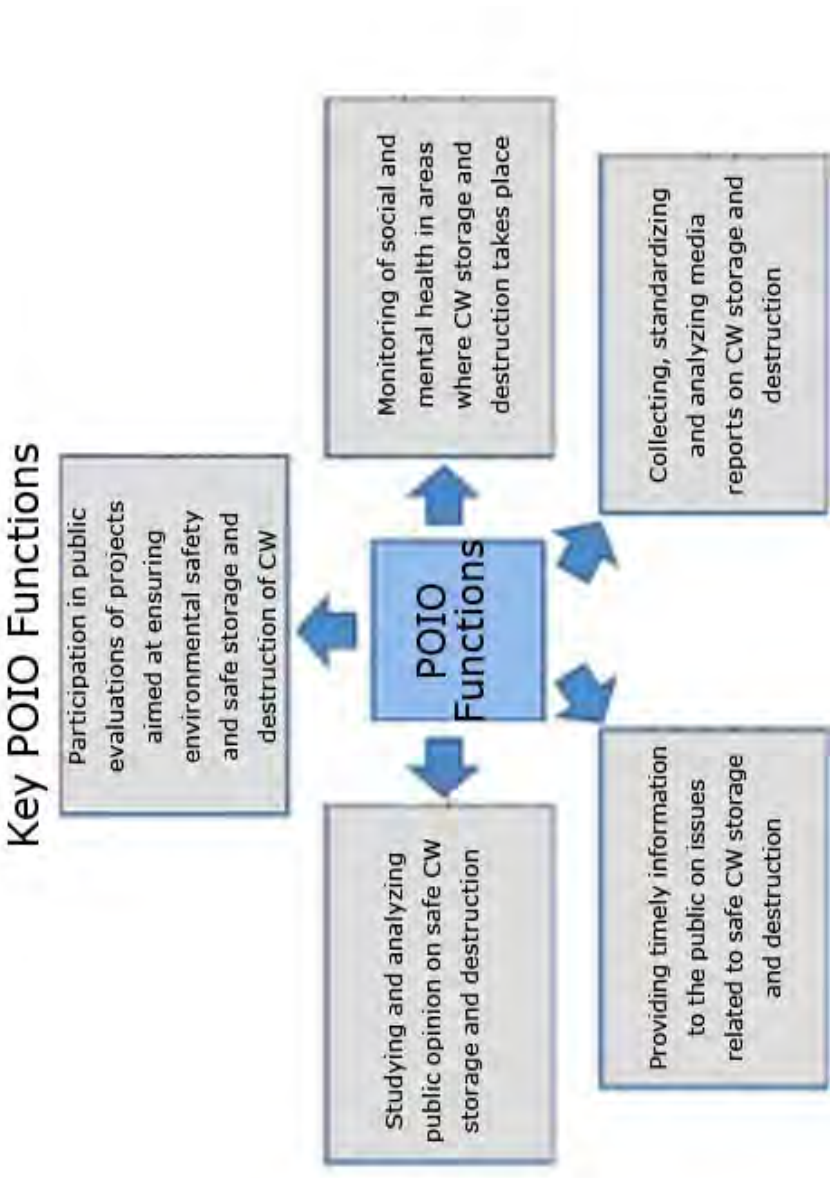

Key POIO Functions
Participation in public evaluations of projects aimed at ensuring environmental safety and safe storage and destruction of CW
Monitoring of social and mental health in areas where CW storage and destruction takes place
POIO Functions
Collecting, standardizing and analyzing media reports on CW storage and destruction
Studying and analyzing public opinion on safe CW storage and destruction
Providing timely information to the public on issues related to safe CW storage and destruction

Figure 3

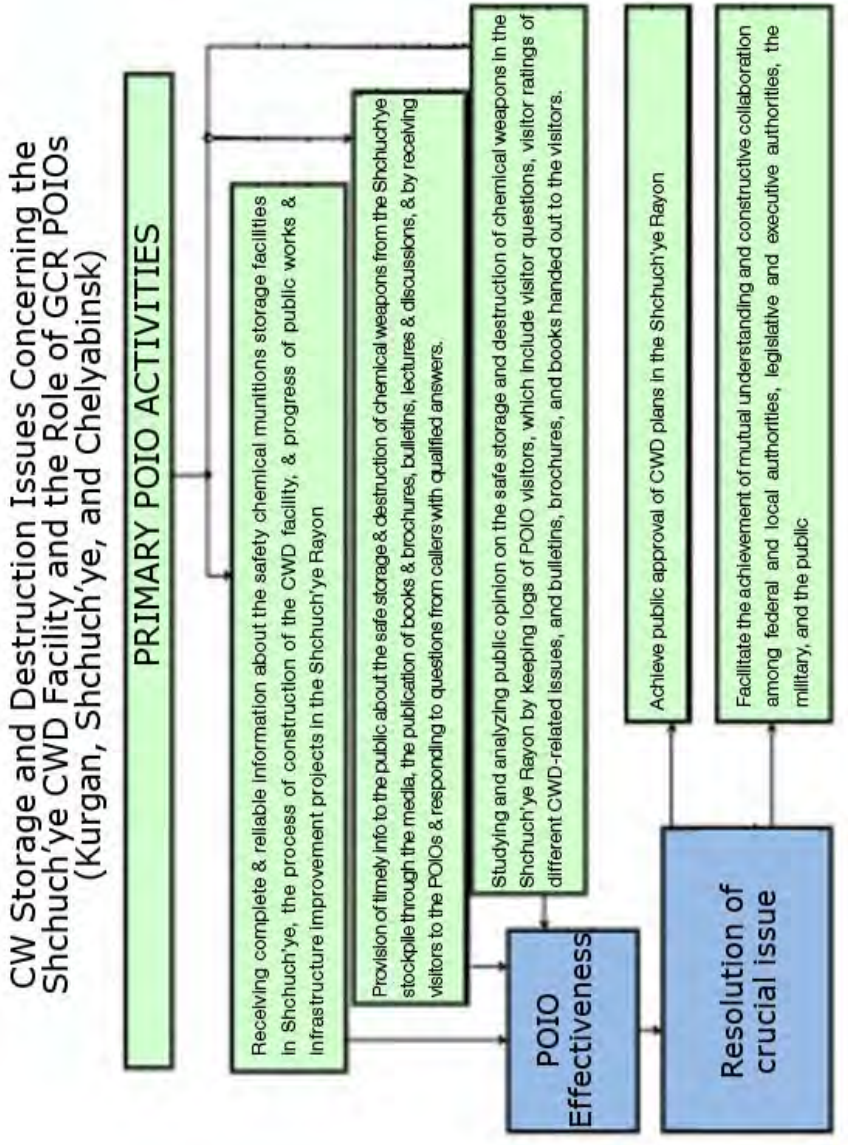
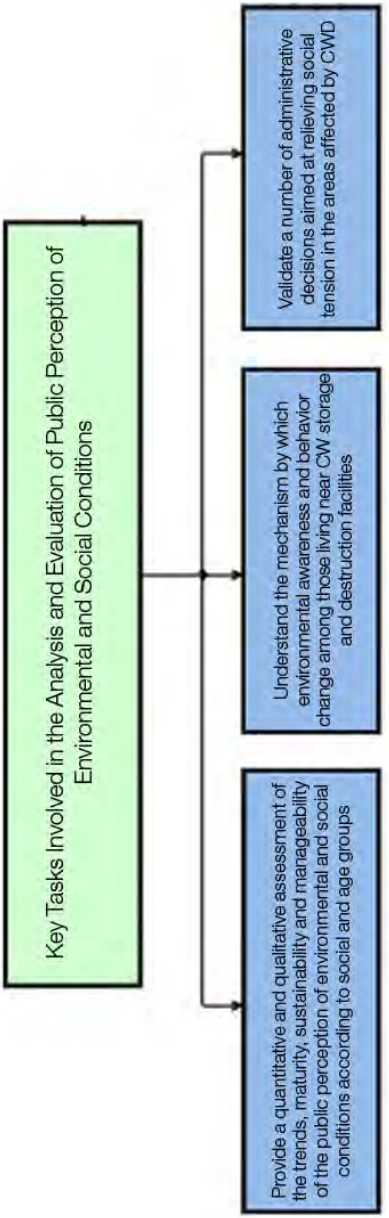

CW Storage and Destruction Issues Concerning the Shchuch'ye CWD Facility and the Role of GCR POIOs (Kurgan, Shchuch'ye, and Chelyabinsk)
PRIMARY POIO ACTIVITIES
Receiving complete & reliable information about the safety chemical munitions storage facilities in Shchuch'ye, the process of construction of the CWD facility, & progress of public works & infrastructure improvement projects in the Shchuch'ye Rayon
Provision of timely info to the public about the safe storage & destruction of chemical weapons from the Shchuch'ye stockpile through the media, the publication of books & brochures, bulletins, lectures & discussions, & by receiving visitors to the POIOs & responding to questions from callers with qualified answers.
Studying and analyzing public opinion on the safe storage and destruction of chemical weapons in the Shchuch'ye Rayon by keeping logs of POIO visitors, which include visitor questions, visitor ratings of different CWD-related issues, and bulletins, brochures, and books handed out to the visitors.
POIO Effectiveness
Achieve public approval of CWD plans in the Shchuch'ye Rayon
Facilitate the achievement of mutual understanding and constructive collaboration among federal and local authorities, legislative and executive authorities, the military, and the public
Resolution of crucial issue

Figure 4



Public Perception of Environmental and Social Conditions:

1. Affects the spiritual aspects of everyday life of those living near CWD facilities.
2. Determines people's behavior & actions, lending them certain purpose & meaning.
3. In practice, reveals peoples' attitude toward the state of their natural and social environments and thus their general satisfaction or dissatisfaction with their environments, and the presence or absence of social tension and anxiety.
4. Reflects all elements of public consciousness, shaped by objective environmental and social factors, as well as value systems and morals that are demonstrated in everyday behavior and actions.

Yet on the other hand, pardon me, but personally — and maybe I am mistaken — it seems to me that these Dialogues are as effective as Communist Party meetings.

Now why did I say that? Everyone knows full well that if there were a truly constructive and strong cooperation among all of those involved in Russia's chemical disarmament process, the many not-insignificant errors and flaws simply wouldn't have happened and would have been properly or promptly dealt with. After all, how can we define constructive cooperation among participants of the CWD process? It is the joint (and I emphasize: *joint*) resolution of the tasks to "construct" (or if you prefer, reasonably and rationally create) a natural and social environment that paves the way for adequate living conditions in which people can thrive.

Constructive cooperation under the CWD program means the effort of everyone with a vested interest in achieving the ultimate goal of the destruction of chemical weapons in a way that is safe for people and the environment. In other words, for all of us, constructive cooperation presumes a team-oriented working environment, so to speak, among those involved in the collaborative process, respect, and, if you like, tolerance.

I sometimes get the impression that the military underestimates the benefits of the fact that their dialogue with the public, to a very large extent, always comes via GCR's POIOs! I have one example for you: it is a simple but very clear one. In terms of public outreach under the CWD FTP, some work is carried out by the newspaper *Rossiiskaya Gazeta*, known as a government mouthpiece that doubtlessly is in possession of large financial resources. Today, unfortunately, only certain companies, organizations and institutions still subscribe to *Rossiiskaya Gazeta*, usually because all federal laws and other statutory documents come into force only after they are published in this newspaper. There is only a handful of private persons that subscribe to the paper. Everything that is published in *Rossiiskaya Gazeta* with regard to CWD issues is filed by GCR's POIOs. We make photocopies of the articles and hand them out to visitors and those who attend lectures, discussions and other events.

The Kurgan POIO hands out hundreds of photocopied articles at its branches (run by volunteers!) and at Kurgan State University, Maltsev Kurgan State Agricultural Academy, Shadrinsk State Pedagogical Institute, and a number of other institutions, in addition to organizations and institutions with social clubs and groups whose slogans are "There is no alternative to the destruction of chemical weapons!" In 2008 alone, we handed out 2,496 copies of six articles on CWD that were originally published in *Rossiiskaya Gazeta*. As a result, we have helped educate at least 2,496 people. For comparison, there are just over 300 subscriptions to the *Rossiiskaya Gazeta* newspaper in the Kurgan Oblast. That says it all!

Among the positive factors of the constructive relations in resolving a number of problems concerning the destruction of the Shchuch'ye arsenal, there is the desire of the oblast's residents to take part in accomplishing certain tasks. One example of the emergence of scientific and practical interest in the use of industrial waste is about preparations being conducted by researchers at Maltsev Kurgan State Agricultural Academy. These preparations are being carried out in order to conduct comprehensive, full-scale experiments on the potential uses of bituminized reaction masses. In particular, the scientists at the Technology and Organization of Construction Division (led by Division Director, Grekhov, PhD), have prepared everything necessary to pave a fragment of road length using bituminized reaction masses as a binding element.

Agreements have been reached that these studies will be conducted in collaboration with the scientists and experts at the State Scientific Research Institute for Organic Chemistry and Technology (GosNIIOKhT) and the Federal Department for the Safe Storage and Destruction of Chemical Weapons (FUBKhUKhO).

The Head of FUBKhUKhO, Lieutenant General Valery Kapashin, has written us to confirm that the quantity of bituminized reaction masses that we have requested will be received once the CWD facility has been converted into a safe industrial plant. We hope that General Kapashin will stand by his written promises and, despite the criticism that has been addressed at FUBKhUKhO, we hope that our scientists will indeed receive the bituminized reaction masses that they have requested.

Without a doubt, the Dialogue participants are, to one extent or another, familiar with the main laws governing these processes. I would like to point out that at the very foundation of fostering a positive public opinion about the CWD process in areas where it is taking place are the social relations among people that are established in the course of their mutual practical and spiritual activities. Of all social relations, the most important have to do with production and the economy, as these aspects determine the nature of all other social relationships (political, legal, moral, religious, etc.). Objectively, the interconnection of all social relations with production naturally lets us consider the manageability of forming a positive public opinion of CWD from a standpoint of the manageability of the production (technological) process.

As you know, the process involves a deterministic part (the components of which can be precisely defined), a stochastic part (having a random variable), and a purely random part (cannot be defined). Strictly speaking, the management of the process of forming a positive (constructive) public opinion of the construction of CWD facilities is essentially the management of a probabilistic social process. In other words: the public outreach efforts taking place as part of the CWD FTP in Russia calls for the management of a probabilistic social process. And I have been addressing this for a relatively long time under the following circumstances.

In our works and my speeches before the public and in the press, many of us addressed the formation of a constructive public opinion of CWD issues, meaning nothing other than the formation of a positive public opinion, or to be honest, simply to obtain the public's approval of the plans to build CWD facilities in the areas where these people live. We all understand full well that this approval must be accompanied by improved living standards.

Dear Dialogue Participants! The lack of constructive cooperation among the key participants of the CWD process in the Shchuch'ye Rayon assumes the management of only the deterministic part of the process of forming a positive public opinion of the destruction of the CW stockpile in Shchuch'ye. The remaining two parts of the process (stochastic and random) are far from being fully resolved and apparently have been left for GCR to tackle alone.

Let us consider one more example. These days, public outreach efforts concerning CWD in the Kurgan and Chelyabinsk Oblasts are being made by the GCR POIOs in Kurgan, Shchuch'ye and Chelyabinsk, as well as the Kurgan Regional Information Center for Chemical Disarmament under the Federal State Editorial Office of *Rossiiskaya Gazeta* in Kurgan, the Military Unit PRG for the Shchuch'ye CWD facility and the State Environmental Control and Monitoring Regional Centers (SECMRC). Cooperation among all of the aforementioned organizations takes place essentially based on the

personal contacts of their managers or individual staff members.

For several years now, I have been stubbornly reiterating in monthly reports (section 8.2: "What must be done in order to stimulate POIO activity") that "We must republish eight brochures (incorporating amendments and addenda). Proposals on republishing brochures can be found at GCR and FUBKhUKhO. Letters have been sent to General Kapashin and Viktor Kholstov (signed by the Professor Ivan Manilo, Director of the POIO and Professor Valentin Kvetkov, the Chairman of the Citizens Advisory Commission)."

In section 8.4, "What are the measures that need to be taken by the Central Office" of GCR, we also have been emphatically writing the same thing for four years:

"Hold working meetings and achieve agreements with the management of FUBKhUKhO:

- on republishing brochures and bulletins on CWD

- on cooperation between the GCR POIO and the PRG (FUBKhUKhO) in connection with the upcoming launch of operations at the CWD facility and the need to support a constructive (positive) public opinion on this issue."

Unfortunately, these issues have still not been resolved.

It was not so long ago that our POIO was visited by Mr. Ruslan Kolodkin, the Advisor to the Director of the CWC Department under the Federal Agency of Industry and Trade (Director Victor Kholstov), and his assistant Mr. Mikhail Perepelitsa. I have stated our views on supporting constructive cooperation among the government representatives overseeing the CWD process, Green Cross Russia and other interested organizations. We do not doubt that this kind of cooperation and coordination will stimulate all public outreach and public relations centers and expand the dialogue we have with the public. In the end, these joint efforts foster a constructive, i.e., positive opinion of CWD facility operations in the Shchuch'ye Rayon.

So I have transitioned from a business discussion to criticism. Intentional criticism! Constructive criticism of the management of GCR and FUBKhUKhO on the problems mentioned above that were, to put it mildly, artificially created and do not contribute to any public outreach efforts.

And what is criticism? Let us allow those of us who studied philosophy to remember. Criticism is a way to identify and overcome errors, a means of fighting against all that is conservative, outdated, that which slows our movement forward. It is a special way of identifying and resolving contradictions, errors and flaws that arise for subjective or objective reasons.

Sometimes one wonders: What kind of constructive view could the public possibly have on CWD if we still do not have a truly constructive level of business relations 'at the top'?

I do not wish to comment further or aggravate the situation, but there is one thing that eloquently, albeit indirectly, illustrates it all. The response we received to our questions (these were questions from the staff members of the Kurgan, Shchuch'ye and Chelyabinsk POIOs) on continuing POIO activities in 2008 was: "The Americans have said that they are prepared to continue supporting the POIOs financially if the military has no objections."

I do believe that says it all.

Thank you for your attention!

The Destruction of Chemical Weapons and Resolution of Local Community Problems



Evgeniy Zakharov
Deputy Head, Shchuch'ye Rayon, Kurgan Oblast

Good day, Dialogue Participants! Before I begin my speech I would like to express my gratitude to the management of Green Cross Russia (GCR) and all of the organizers for the opportunity to speak at this public Dialogue on chemical weapons destruction (CWD).

There is not much time left before operations are launched at the CWD facility in Shchuch'ye. Under the Federal Target Program (FTP) for CWD in the Russian Federation, the construction of the CWD facility is scheduled to take place at the same time as construction of social infrastructure projects for the Shchuch'ye Rayon, where chemical weapons are stored. Soon, the destruction process will begin for weapons-grade organophosphate toxins.

In meeting its obligations, the Federal Department for the Safe Storage and Destruction of Chemical Weapons (FUBKhUKhO) has built and is still building new projects for the community, with consideration for the development plan for the town of Shchuch'ye and the agreed financing from the federal budget. These projects include buildings and elements of civil infrastructure designed to improve the living conditions of the residents of the town and the rayon. Dual-purpose facilities have also been built and are being phased into operation, such as a gas main, a water supply system, and many other features that will serve both the CWD facility and the needs of the town and the rayon.

As part of the FTP, the following facilities have been built and are already operational:

- High school No. 2 in the town of Shchuch'ye; this new school meets modern standards and can accommodate 590 students.
- High school No. 4 in the village of Planovy next to the town of Shchuch'ye, which can accommodate 190 students. This new school has made it possible for children from this military community and nearby villages to obtain a secondary education without having to travel into the city. Thanks to its proximity to the Military Unit, this school also features a successful military cadet program.
- At present, the housing project for CWD facility employees, located within Shchuch'ye city limits, is the site of active construction projects, such as a new kindergarten that will accommodate 175 children. This will help assuage childcare problems for parents with young children. The construction of a new school that will accommodate 275 children has also recently begun.

Special importance is being given to the health of the residents who live in the emergency planning zone (EPZ) and surrounding areas; in connection with concerns for

these residents, the decision was made to repair and refurbish the Shchuch'ye Central Rayon Hospital. The project was a success and the hospital is currently operational. I would also like to note that this hospital also boasts the best medical service facilities in the Kurgan Oblast.

A diagnostic and consultation clinic, furnished with modern equipment, has also been built and opened to the public in Shchuch'ye in an effort to improve medical care for those living and working in the EPZ near the CWD facility. The medical examinations conducted among the residents of the EPZ have shown that, at present, no illnesses have been identified that are associated with the effects of toxic agents.

One of the most important events for the Shchuch'ye Rayon was the construction of a water pumping station and a replacement water conduit from Chumlyak to Shchuch'ye. These efforts have provided a centralized water supply for three municipalities — Shchuch'ye, and the Chumlyak and Nifansk villages, which together have over 13,000 residents.

District heating is another big achievement for Shchuch'ye residents; under the CWD FTP, two modular gas boiler plants have been installed. They meet all environmental requirements and are hooked up to the gas main. Now most of the town's apartment buildings and administrative buildings have reliable heat supply. This has also replaced four decrepit, obsolete boiler plants that were running on solid fuel.

The town also now has a new residential community for town residents and experts working in the industrial zone.

A fire station equipped with state-of-the-art equipment has been built and put into operation. A transformer substation has also been put into operation and now ensures continuous electricity supply to the local residents. These are just some of the many social and civil infrastructure projects that have been completed.

The residents are concerned, however, by the potential effects of the CWD facility on the environment once it is operational. Thanks to the efforts of the State Environmental Control and Monitoring Regional Center (SECMRC) in the Kurgan Oblast, the area around the facility, the EPZ and surrounding territories are monitored regularly. In September 2008 alone, a total of 652 tests have been conducted, primarily of samples from the air, natural water and soil. Complete information on test results has been made available to local residents.

I also have to mention the great deal of work conducted by GCR's Public Outreach and Information Office (POIO) in Shchuch'ye, headed by Galina Vepreva. Over the past year, Shchuch'ye residents and the Shchuch'ye Rayon Administration have developed a trusting, partnership relation with the POIO. Principles such as openness, democracy, transparency and accessibility for everyone lie at the heart of the POIO's activities. Public opinion polls conducted by the POIO are also open and accessible to everyone, and anyone who asks for it will be provided with comprehensive information on all aspects of the storage and destruction of chemical weapons.

In addition to her main tasks, Ms. Vepreva is also an active public and civil figure who serves simultaneously as Deputy and Vice Chairman of the Rayon Duma. She is also a member of the rayon's Citizens Advisory Commission for CWD issues. The objective of the Commission is to exercise civil control over the CW storage and destruction processes, help coordinate the actions of the public and the actions of bodies of local self-government, and facilitate collaboration among the FTP participants.

Thanks to the POIO's efforts, an environmental and healthy lifestyle children's

camp has been organized every year for the past eleven years. The camp, led by Vitaly Lagoida, hosts up to 200 teenagers aged 14–18 each year. These teenagers gain first-hand experience, practical skills, and an education about the environment. In addition to the camp, the Rayon also offers a year-round environmental education program for children and teenagers called "The Environment and Nature Conservation." Program participants include children and teenagers of all ages, including children from low-income families and "troubled" teens, as well as their parents and other family members. This year, Galina Vepreva and Vitaly Lagoida arranged a seminar on problems that troubled families are facing and possible solutions, for which the rayon administration would like to extend a word of thanks.

Furthermore, there is another idea in the works at the POIO concerning part-time employment of the local population, for example, seamstresses working at home, among other things. And of course we must also mention the children's drawing contest held on International Children's Day. The exhibit takes place in the Shchuch'ye town square. This is one of the colorful events on this special day where children dedicate their drawings to the natural environment of the Trans-Urals and their home region. Over 200 children usually participate in the contest, and each of them goes home with a gift received directly from the staff at the POIO.

Over the years that we have worked with the POIO, its highly professional staff and experts have become our true and equal partners, and we hope to continue in this same productive and mutually beneficial spirit.

As we discuss the highlights of the past year, I would also like to mention some of the key problems that have arisen in connection with the implementation of the CWD FTP.

I will start with one of the main problems seen both in Russia in general, and in our rayon in particular: roads Over the period of construction, the road surfaces of many throughways between villages in the rayon and in Shchuch'ye, the rayon's administrative center, have reached unacceptable condition. The streets, which previously had solid asphalt paving, have suffered due to the use of heavy-load equipment (these streets include the VLKSM 50th, Bazarnaya, Kirova, Proletarskaya, Stroitelei, and many others).

Furthermore, the contractors laying service lines in the town and nearby villages dug up the surface of these roads, but neglected to adequately repair them afterwards. As a result of their negligence, Karl Marx, Kuibysheva and Kalinina streets have been left unpaved for a long time. The repair works along Lenin Street, where the narrow strip of asphalt was laid without consideration for any kind of basic technology and has since become even narrower, can be met with nothing other than bewilderment. Even now, more than half of May 1st Street, Sovetskaya Street, Krupskaya Street and others remain unpaved, leaving the local residents baffled and angry. All this despite the fact that funds have been allocated from the federal budget precisely for this type of repair work. With regard to this problem, both the head of the rayon and representatives of the oblast administration have initiated targeted efforts to ensure that contracting agencies carry out their work in an acceptable manner.

An equally important problem is that of staffing and employment in general. As the neighbors of the facility under construction, many highly-qualified experts in various fields are leaving their sectors in favor of the new facility in hopes of better pay, but at the cost of losing their professional skills and qualifications.

Furthermore, the obvious salary problem for skilled workers and less qualified workers for the same type of work means that local residents often receive less pay than those who commute to the area, who sometimes also receive additional under-the-table payments.

Many contractor agencies are not registered with the tax authorities in the Kurgan Oblast, and as a result, these organizations, which operate and receive revenue in the Shchuch'ye Rayon, pay taxes to other administrative authorities of the Russian Federation. As a result, the rayon's budget is deprived of considerable funds needed to resolve socially vital issues for its residents.

Many people from neighboring rural communities and villages have left their previous jobs, leaving some agricultural enterprises with a deficit of machine operators, drivers, and other skilled workers.

Yet another financial problem for some rural residents is the construction of a railway from the Military Unit, where warheads are stockpiled, to the CWD facility. During preparations for the construction of this railway, agriculturally zoned plots were selected — in particular those of cooperative land owners who lived in Petrovsk village. Organizational efforts were carried out and an agreement was reached with cooperative land owners under which they would receive monetary compensation for the use of their land. Although over a year has passed after the contracts were sealed, the land owners have not received any monetary compensation so far. Meanwhile the construction of the supply railway is moving full speed ahead. At the same time there are currently many investors interested in using agriculturally-zoned land for agricultural purposes under mutually beneficial terms. This is no example of partner relations. Nifan community residents are suing for their right to receive compensation for land taken from them to build housing for CWD facility experts.

Another problem is the transfer of social infrastructure buildings that are already constructed and being used under city ownership. These include the water supply line from Chumlyak to Shchuch'ye, the water pumping station, two high schools, a 24-unit apartment building for medical staff, and many others. From a legal standpoint, this complicates the ability to appropriately use and maintain these buildings. They are *de facto* owned by municipal institutions and organizations, but *de jure* they are federal property, which at the very least fails to comply with civil legislation. The institutions and organizations should be able to register these buildings as their own, or they should receive the right of building operational management. This is possible only once the city receives documentation confirming the registration of ownership with the Russian Ministry of Justice.

In conclusion, I would like to address the problem that, in the near future, the local administration and the residents of our rayon will face the question of the future for the facility and its conversion into a commercial, peaceful production facility that will meet the needs of the local and national economy.

All of us — the global community, the different levels of governmental power, public organizations and the people themselves — understand all too well the need to destroy chemical weapons: there is simply no other way. In resolving this problem, we must continue to honor the interests and the problems of all of the parties involved in this process, and that, of course, includes the local community.

Thank you for your attention.

Lewisite Project is Nearing Completion, But Problems Remain



Vladimir Konyashin
Chairman, Citizens' Advisory Commission
Member, Public Chamber of the Udmurt Republic

Dear Dialogue Participants! Our Citizens' Advisory Commission (CAC) was established in 2004. Since then, we have held 38 meetings, reviewed over 80 issues concerning the destruction of chemical weapons (CWD) and the infrastructure projects that are part of the Federal Target Program (FTP) on CWD.

The CAC's members include representatives of political parties, public and national organizations, and people with different — even diametrically opposed — views on CWD. But this approach to committee structure was made necessary by the circumstances at the time.

Preparations were underway for the construction of the facility, and we needed to find ways of working with the rayon administration, the public, and government representatives in order to take on such a highly complicated task as the destruction of toxic agents. We needed to reach an understanding and work constructively together toward completing our primary task: the destruction of chemical weapons.

Green Cross Russia came to our aid and helped the local administration establish the Kambarka Rayon CAC.

The CAC's five years of experience have proven that this is the right way to get the public involved in resolving issues of national importance. For the first time, an organization was created in the rayon where people were able to apply their experience, knowledge and expertise in resolving this very complex problem.

As you know, just five or six years ago, there were many organizations addressing the problems of chemical weapons. But where are they now? At present, there are two public organizations in the Kambarka Rayon: Green Cross Russia and the CAC. And I would like to express my deep gratitude to Green Cross Russia for its support and understanding of our work.

Today we are reviewing our results, what we have managed to resolve, and what we have not. It has been two years since the speech I gave after the Kambarka factory was built. In that speech I identified the issues that we would need to work on together with the Green Cross Russia Public Outreach and Information Office (POIO).

We have always worked on maintaining a positive attitude about the construction and operations of the CWD facility, while providing objective information to the public about the progress of infrastructure projects mandated under the CWD FTP. The list of public buildings to be constructed was discussed in detail with the local authorities and the local residents. It was signed by the heads of the Federal Department for the Safe Storage and Destruction of Chemical Weapons (FUBKhUKhO), and subsequently approved by the Federal Agency on Industry, the President, and the government of the Udmurt Republic.

There were many problems, and we were able to resolve them. Today, the stockpiles of liquid lewisite have been fully destroyed in Kambarka. But some issues remain, and most likely we will need time to resolve them together with interested organizations.

The Kambarka facility officially began operations on March 1, 2006. Today, this CWD facility employs 1,300 workers, 74% of which are residents of Kambarka and the Kambarka Rayon. This has had a very positive impact on the local employment rate, despite the fact that our rayon ranks among the worst in the Udmurt Republic in terms of unemployment.

Today, rayon residents and the CAC are concerned about what will happen with the facility after the CWD process is completed.

We would like to have clear-cut information as well as a program specifying the details — including the responsible parties — of the facility's conversion; what will happen with the infrastructure that is already in place, who will be in charge of the associated housing project (over 14,000 square meters of residential space), and which buildings and structures will be left in place? How many years will it take to treat the reaction masses (hydrolysate), 12,000 tons of which have already accumulated at the facility? Are there plans to sanitize the site, considering that mustard gas was destroyed there in the open air in the 1950s? We are especially concerned about the fate of the concrete structures that were used to burn mustard gas; what remained of them was sprinkled with lime, and a "Hazard Zone" sign was posted. There are about 60 of these containers. What is their status now and how are they affecting the environment? This question worries not only the CAC, but the local residents, too. And the CAC intends to address these questions at its upcoming meetings.

In the second half of my speech today, I would like to touch upon the way in which the public works program is being carried out. This is something that probably concerns all of the regions in which CWD facilities are operating.

It would be wrong to say that the construction of the CWD facility hasn't changed life for Kambarka residents for the better. The rayon now has access to natural gas, all of the town's boilers have been transitioned to run on that fuel, we now have sustainable heating, and electricity issues in the town and the rayon have been resolved.

A great deal has been accomplished by the government with regard to the renovation of schools in the town of Kambarka. Nearly all of the school buildings have been modernized. Classrooms now meet all modern requirements. Equipment in the cafeterias and workshops has been replaced, and schools now have computer labs. The recreation halls have been renovated and the school grounds have been improved with landscaping, playgrounds, and other features. For this I would like to express our thanks to FUBKhUKhO and personally to Valery Kapashin and Viktor Kholstov, the Deputy Head of the Federal Agency on Industry.

Of course, the town and the rayon would like to see more, but the residents and the CAC understand that construction costs are on the rise each year, along with the inflation rate, and that the threshold for capital investments has been agreed to and approved by the government, making it difficult to adjust. Yet we still need to raise the question of who decided to remove the remediation of the Kambarka Pond from the list of pre-approved items. The pond is the only source of water for the town, the rayon, and the CWD facility.

Kambarka Pond was built in 1767 and since then, it has only been cleaned once — when the tsars were in power. The pond has not undergone an extensive cleaning since.

The residents pinned all of their hopes on the CWD Program. Preparatory inspections had been completed, and documentation was prepared for the pond cleaning project. And then we discovered that, just as the FTP nears completion, this project was taken off the list, without a word to the town residents.

According to the information of the State Environmental Control and Monitoring Regional Center (SECMRC) for the Storage and Destruction of Chemical Weapons in the Udmurt Republic, the samples taken from the Kambarka Pond during summer months do not fully meet bacterial content standards. This means that the pond — especially in the summer — is not safe for swimming, nor for use as drinking water. In the summer, algae grows in the water and there is an unpleasant smell.

The local authorities and the Russian Federal Consumer Rights Protection and Human Health Control Service officially do not permit swimming in the pond in order to avoid taking on the responsibility for the health of the residents.

However, the CAC and the rayon's residents are bringing the issue of remediating the Kambarka Pond to the attention of the government of the Udmurt Republic so that it can be resolved with FUBKhUKhO. According to data from the Central Rayon Hospital, over the past year or two, the number of gastrointestinal disorders has increased significantly. Without a doubt, this is the result of consumption of water that is unfit for drinking. In September, the published results of water analyses improved, but for some reason, the actual quality of the water did not improve and residents continue to complain regularly.

Of course, the social problems facing the municipalities where CWD facilities have been built and are operating, and where they are currently being built, arose long before the construction of these facilities began. Today, the residents are taking note of what the CWD Program has given us.

Again, the residents visit the Green Cross Russia POIO and the CAC, and they are waiting for us to provide them with the answers to the questions I addressed today.

Production of Chemical Weapons in Chapaevsk: Consequences and Solutions



Tatiana Baranovskaya
Samara Office, Green Cross Russia

Chapaevsk, a town in European Russia, has a population of roughly 73,000. The town was founded in 1909 as a settlement for workers at an explosives factory (the first in the country to manufacture TNT). The town produced weapons and gunpowder until the late 1920s. Later, most production was focused on chemical weapons. During World War II, Chapaevsk was one of the country's largest manufacturers of mustard gas and lewisite, one of the ingredients of which is arsenic trichloride. Experts have concluded that literally everything here is permeated with hazardous substances. Soon, the buildings and equipment will be completely destroyed. Under the program to eliminate the consequences of chemical weapons production in Chapaevsk, a special division will be stationed there in order to destroy hazardous buildings and neutralize the debris using internationally recognized methods.

A study was conducted on the state of the Chapaevsk population's reproductive health. This town has a consistently higher rate of spontaneous abortions than that of other cities in the Samara Oblast. The health of today's generation of children in Chapaevsk is another reason justifying a discussion of the catastrophic consequences of chemical weapons production on the health of the town's residents and their children. Health statistics show that in Chapaevsk, compared to other cities in the Samara Oblast, over a period of 10 years (1984–1993), average morbidity rates (based on reported cases) were, according to statistics, significantly higher for diseases of the blood and blood-forming organs, including anemia. Statistics show that the infertility rate is considerably higher than in the control city of Kinel. Conclusive diagnoses of the most frequent contributing factors causing infertility among the women of Chapaevsk point to various endocrine abnormalities. Children in Chapaevsk have also presented a high rate of pathologies of the central nervous system, including hydrocephalus. Among the risk factors, the most often seen (among 58 children suffering from hydrocephalus) were various illnesses suffered by the mother during pregnancy: preeclampsia, risk of miscarriage, and pre-term labor. Oblast-wide indicators were used as control figures in order to evaluate the mortality rates from malignant tumors in Chapaevsk. The mortality rate among men in Chapaevsk from malignant tumors, cancer of the esophagus, intestinal cancer, cancer of the larynx, lung cancer, bone cancer and soft tissue sarcomas are higher than in the oblast in general. The risk of dying from these types of tumors is 1.8, 3.3, 1.8, 3.5, 2.7, and 2.3 times higher, respectively, for Chapaevsk men than for men in the Samara Oblast. Women in Chapaevsk are at a higher risk of dying from breast cancer and cervical cancer. Malignant tumors shorten life spans in Chapaevsk by 2.3 years for men and 1.9 years for women.

According to the data of the Investigation and Search Unit No. 2 (for anti-drug trafficking measures), the Criminal Police Unit of the Samara Oblast Chief Internal Affairs Department has 1,387 local residents from Chapaevsk registered with the local drug addiction clinic as drug addicts, including 274 women. Over one thousand of these people are aged 18–39. Each month, up to four narcotic overdoses are reported in the area. During the military service draft each year, another 5–6 cases of opiate addiction are identified. The number of deaths from overdoses continues to rise from year to year (10 cases in 2007). The level at which drug addiction is spreading in Chapaevsk is three times higher than the average oblast-wide figure, and five times higher than nationwide statistics.

In early April 2008, the former head of the Chapaevsk Administration, Nikolai Malakhov, proposed that the town be relocated. He believes that arranging resettlement for the town's 70,000 residents is the best way to tackle the problems of one of the most polluted towns in the Volga Region. "Yes, we have environmental problems in Chapaevsk. These same problems exist in Samara, since it is right next to Novokuybyshevsk. But these problems are manageable, and I would not refer to them as an emergency," said Vladimir Artyakov, the Governor of the Samara Oblast, in response to Mr. Malakhov's proposal.

A series of federal target programs (FTPs) have been adopted and are currently being implemented to resolve the town's current problems:

- The FTP for protecting the natural environment and the local residents against dioxins and dioxin-like toxicants (1996–1997), Order No. 1102 of the Russian Government, November 5, 1995.
- The FTP for the socioeconomic rehabilitation of the territory and ensuring the health of the population of the town of Chapaevsk (Samara Oblast) (1997–2010), Order No. 720 of the Russian Government, June 21, 1996.
- The FTP for the socioeconomic rehabilitation of the territory and ensuring the health of the population of the town of Chapaevsk (Samara Oblast) (1997–2010), Order No. 1353 of the Russian Government, November 14, 1996.
- The FTP for the environment and natural resources in Russia (2002–2010), Order No. 860 of the Russian Government, December 7, 2001.

Goals and Tasks

- Bringing the socioeconomic situation in Chapaevsk up to normal standards.
- Improving living conditions and the health of the local residents.

Results

- New industrial water treatment facilities for removing iron from drinking water (capacity: 30,000 m^3/day).
- The first phase of a test range for the burial of neutralized industrial waste has been completed.
- A new children's hospital is up and running (60 beds).

However, it is important to note that of the RUB 7.9 billion required to complete the Program, only RUB 100 million, or 1.42%, have been spent.

The Efforts of Public Organizations in the Shchuch'ye Rayon toward Resolving Social Problems Stemming from the CWD Program



Tatiana Sirota
Member, Union for Chemical Safety
Shchuch'ye, Kurgan Oblast

Ladies and Gentlemen! I am pleased to have this opportunity to meet with you. At the Dialogue today, I represent fifteen public organizations, the leaders of which have signed an appeal to the Russian President regarding the situation that is developing in the Shchuch'ye Rayon due to the implementation of the Chemical Weapons Destruction Program (CWD Program) in the area.

Residents who live in Shchuch'ye and who express their dissatisfaction with the pace of public works projects are accused of being poorly informed. It is a mistake to think so. Information is available: there are two information centers — Green Cross Russia (GCR) and the Public Relations Group of Military Unit No. 92746. Official publications inform us of the high quality of the construction in progress and the careful spending of the CWD Program funds. We are meant to believe this is how it is supposed to be. But the residents of Shchuch'ye see that, unfortunately, there is a difference between the plans and reality.

First, they reduced the list of public works projects to be executed in the rayon under the Federal CWD Program. The concept of "social benefits" was set out in the Law on Chemical Weapons Destruction, and it has been replaced with the concept of "social guarantees." Despite this, Article 4 on the storage, transport and destruction of chemical weapons specifically reads: "the development of draft federal laws and other statutory legal acts establishing different types and amounts of social guarantees *to the personnel of chemical weapons destruction facilities ("facility staff"), employees hired to carry out the work specified in Article 3(2) of this Federal Law ("hired employees"), citizens who reside permanently or mostly in emergency planning zones (EPZs) and citizens who work in organizations, regardless of their legal form, located in said zones ("citizens who live and work in EPZs")…"* It has been eleven years since this law was passed. The residents of EPZs do not know whether or not to hold out any hope as to whether the Law's clause on social guarantees will ever kick in.

The quality of the construction projects comprising the social infrastructure leaves much to be desired, and if the CWD facility is built as shoddily, then there is no point in discussing safety.

The Federal CWD Program states that this program is being carried out using funds from the federal budget. The creation of the Rayon Department for Civil Defense and Emergencies is a positive sign. But this entity is funded out of the oblast's own pocket. Why can't the federal budget funds allocated to the Ministry of Emergencies include the financing for the program for the safe storage and destruction of chemical weapons? And it should include, of course, not only pay for the staff of the Department for Civil

Defense and Emergencies, but also evacuation routes and means. It should include construction of facilities (maybe even mobile facilities) for evacuees, medical aid points with trained medical personnel and equipped with antidotes and other treatments for evacuees. Unfortunately, we do not have these things. Finally, the warning system has been set up and tested. But the **entire** warning and communications system has yet to be thoroughly tested.

We see the creation of a Citizens' Advisory Commission (CAC) as the democratization of the CWD process. Everyone is welcome to attend the meetings. The proposals that are made are presented as recommendations. Officials may use this platform to learn about public opinion, since its participants include representatives of the local community, who voice the views of the local residents on the implementation of the CWD Program. Yet it is rare that we see representatives of the government and its subcontractors at CAC meetings.

In the autumn of 2007, the residents living in certain apartment buildings happily welcomed the appearance of heat from gas boilers in their apartments. But the public works projects are still lagging. Each year, the list of projects gets shorter, and the launch of the remaining projects is postponed, which is affecting the living standards of Shchuch'ye residents. If you take, for example, the delivery of natural gas to the Shchuch'ye Rayon at market prices, it would seem that this has no relation to the CWD Program whatsoever. Yet the residents who have waited so long for gas supply to come to their district, and the lower heat and gas rates that were supposed to come with it, have received only rate increases. In neighboring districts that received gas thanks to the CWD Program, the rates are significantly lower. This is explained as a result of Shchuch'ye becoming a gas subscriber after July 1, 2007 (Order No. 333 of the Russian Federal Government, May 28, 2007), which sets out the guidelines for gas shipments at market prices. This happened due to the failure to meet deadlines to install the gas supply in the rayon as set out in the list of public works projects. The gas main was supposed to have been completed in 2006. When asked why this happened, government representatives have replied that the engineers are to blame. There is your connection with the Program, and the negative attitude that the local residents have toward it.

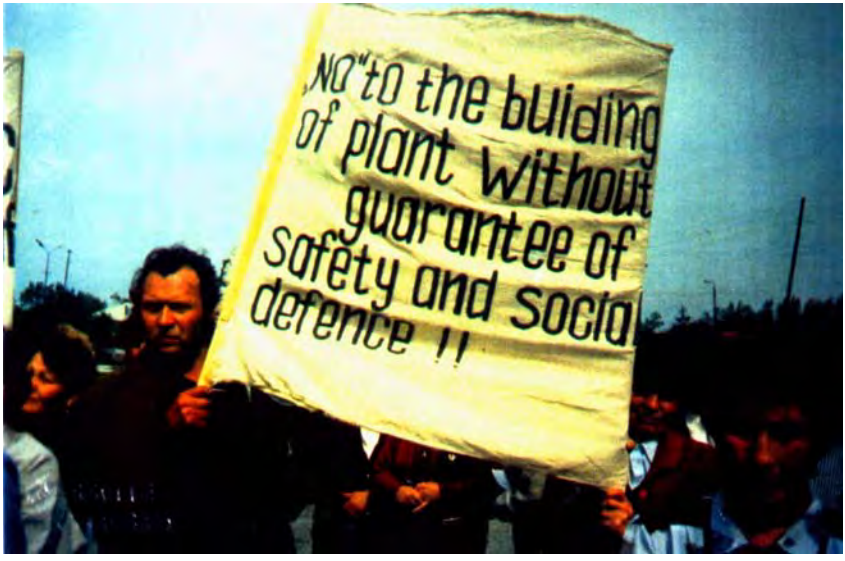
A great deal of money was spent on projects that were either not built or were started, but not finished. The residents are worried: will the money that was spent on these projects under the Program be returned?

We have heard from the Program executives that the estimates for construction and equipment supplies became complicated. But who prepared the estimates? For example, supplies of equipment for the Central Rayon Hospital. The following equipment and prices are listed in the accounting books: a planter for RUB 11,232, a meeting table for RUB 57,172, a child hospital bed for RUB 76,420, and an AMBU silicone resuscitator for children priced at RUB 243,750. The new school, No. 2, has not received equipment for the chemistry or physics classrooms, but there is no money. And how will they get the money, with the high prices for equipment at the hospital?

For the last three years, we have been discussing the construction taking place on private land. Even now, the owners of those plots of land have not received compensation for the land that was expropriated from them for the purpose of building public works projects and infrastructure for the CWD facility.

We have been blamed for wanting to use the CWD Program to resolve the area's social problems. But is that so? They say that one must pay for one's fear. No one is

paying for the fear. And the question at hand addresses only what was initially promised. There is no one in the rayon who has spoken out against chemical disarmament. Instead, we are hearing growing cries for respect for the local residents. Here one of the slogans displayed at the central square in downtown Shchuch'ye during the public hearings comes to mind: No Chemical Disarmament without Social Guarantees.



Promoting the Safe Destruction of Chemical Weapons in the Public Consciousness





Aleksandr Revyakin,
Director, Moscow Humanities Academy

Vladimir Bazhutin,
Director, Board of Trustees, Shadrinsk Student Business Incubator

Ridding the world of the chemical weapons that accumulated during the arms race using the safest and most environmentally-friendly method is the task that faces the civilized world today, and Green Cross International is one of the frontrunners in this field.

The scientific community and higher education in Russia are developing approaches toward transforming the public's perception of chemical weapons away from that of a deterrent to that of a source of certain danger for the environment of the country in possession of the weapons.

The facility for the destruction of toxic warfare agents and the detoxification of warheads in Shchuch'ye (Kurgan Oblast) was built with the intent to rid civilization of the very possibility of their use, but it does not solve the problem of the safe destruction of chemical weapons. The facility will produce another hazard – bituminized reaction masses – and for now it is viewed only as a regional problem.

The environmental hazard of reaction masses resulting from the destruction of chemical weapons is certainly lower than that of toxic warfare agents, but this hazard must still be recognized and seen as a complex by-product of the process of safe chemical weapons destruction (CWD). On October 8, 2008 in the town of Shchuch'ye, the editorial team of the newspaper *Rossiiskaya Gazeta* and the Government of the Kurgan Oblast held a roundtable discussion on "The Launch of Operations at the CWD Facility in Shchuch'ye and Its Role in Completing the Third Stage of the Federal Target Program (FTP) on CWD in Russia." This was a special event, as access to the facility was granted to media representatives and representatives of public and government organizations that were either involved or interested in promoting the concept of safe CWD among the public.

Outstanding PR managers, talented experts with years of experience with CWD at other Russian facilities held a persuasive demonstration of the guaranteed safety of the upcoming process of working directly with toxic warfare agents at the facility and

using technologies incorporating dual-safety systems that rule out even human error. However neither the topic of the roundtable event nor the discussions that took place there addressed the prospects of the safe storage of waste produced by the Shchuch'ye facility. The agenda of this Dialogue, we believe, addresses this issue and highlights it as another topic that requires better understanding.

There is a surprising contradiction in human nature that must never be forgotten: while he may call himself *homo sapiens* (a rational, thinking being), in groups, men are capable of madness, when fighting their own ilk. The world witnessed this once again in the recent events in the Caucasus. One can't help but agree that Green Cross's activists have undertaken a difficult job in striving to resolve the problem of lowering the probability of people doing horrible things to others and nature by educating and informing the general public about the possibility of living in a safe world, a world without chemical weapons. The reasonable people of the world applaud you, and we, the participants of this Dialogue who are not members of Green Cross, would like to express our gratitude for your efforts, which are truly noble.

In Russia's Urals region, there is another problem that cannot go ignored: the rehabilitation of the lands that have been damaged as the result of radiation accidents and the operation of the Mayak facility in the Chelyabinsk Oblast. The lessons that we have learned from this tragedy testify to the previous lack of public information and education efforts; this led to the uncontrolled spread of polluted soil and debris into other territories and pockets with heightened background radiation levels. As a result, the local residents developed a fear of radiation.

The consequences of the Mayak accident and CWD safety issues are perceived as one and the same by local residents in the town of Shchuch'ye, and as a rule, these things are confused in the public eye. Having clarified this point, Professor Manilo, the Director of the Public Outreach and Information Office in the Kurgan Oblast, and I developed a specialized course in 2003 on the Safe Destruction of Chemical Weapons for students at the Shadrinsk State Pedagogical Institute majoring in Public Safety. This course is still taught at the Institute today. As the Green Cross regional manager, Professor Manilo was pursuing the goal of promoting CWD safety to a wider audience. The result was a reliable mechanism that exponentially increases the number of people who are educated in this area, since each student, over the course of two pedagogical practicums during his or her studies, is required to teach several classes at different schools in the cities and rayons of the Urals region. After completing their studies, these graduates continue to adhere to the same ideals and are capable mentors along the civilized road of ridding mankind of chemical weapons. The use of this mechanism has resulted in the creation of a group of health and safety teachers, circles and libraries at educational institutions, regular conferences, roundtable discussions and talks, publications in the press, and television and radio broadcasts.

Today, the fruit of our joint efforts with the leaders of Green Cross in the Kurgan Oblast, the Humanities Academy annex, and the representatives of the Tomsk State University of Control Systems and Radioelectronics in Shadrinsk is the student business incubator on Promoting the Safe Destruction of Chemical Weapons in the Public Consciousness. This project promises to recruit university and school students to Green Cross's cause, in addition to the managers of companies and organizations and progressive thinkers. This is confirmed by the recent Modern Humanities Academy's All-Russian Telethon, the theme of which was "Educating the Public and the Innovative

Development of Russia." Roughly 60 leaders from the Kurgan Oblast, town and rayon were present at the Academy's studio at the Shadrinsk Annex. Alexander Tropin and Marina Tyushnyakova, Academy students from the Shadrinsk Annex, organized a booth that offered handouts on CWD safety, and brochures and books were also distributed to telethon participants.

While books and brochures may be left unread, a lively dialogue with the public and answers to the questions that concern people most pave the way for Green Cross's work today. The Academy, a private institution, offers a telecommunications system that may become the regular venue for Green Cross events, according to the rector, Mikhail Karpenko, PhD. This system would make it possible to hold teleconferences, telethons, roundtable discussions with tens of thousands of viewers gathered at the Academy's 600 access points in Russia and the CIS. There are more than 20 access points in the Kurgan, Chelyabinsk, Sverdlovsk and Tyumen Oblasts alone. Furthermore, there is an opportunity for Green Cross to use the open television channel SGU-TV, which is viewed by satellite TV subscribers. Another possibility would be collaboration between Green Cross and the Academy, which would design and sell month-long SGU-TV subscriptions to the public, during which Green Cross would broadcast important information.

Green Cross staff members stand out because of their competent approach to building information and their results-oriented approach to educating people with their life experience and education levels in mind. Promoting true and scientifically-founded information about chemical disarmament among the public is a difficult task that is part of ensuring the information security of the population of the Urals region. The joint efforts of Green Cross and institutions of higher education in the Kurgan Oblast can help us succeed.

Allow me to thank Sergei Baranovsky, the President of Green Cross Russia, for providing the opportunity to take part in such an important international dialogue. I would also like to assure you, my respected Russian and foreign colleagues, that like-minded activists and Green Cross staff in the Kurgan Oblast have increased and will continue to increase based on a solid understanding of the problems at hand and cooperation in the fight for a world without chemical weapons.



Opening of the Leonidovka facility, June 2008



Representatives of Parsons Global Services Inc., Green Cross Russia, Green Cross Switzerland, and Global Green USA are visiting early construction of the facility in Shchuch'ye.



Sergey Baranovsky



Stefan Aus dem Siepen



Vladimir Konyashin



Vladimir Filippov and Nikolai Kirianov



Left to right: Andrey Shevchenko, Natalia Kalinina, Sergey Baranovsky, Krzysztof Paturej



Left to right: Galina Vepreva and Marina Yanchenko

Sergey Kopeykin, Assistant to the Head of the Federal Department for Safe Storage and Destruction of Chemical Weapons, awarded medals for cooperation in chemical disarmament. Among the many receiving the medal are the following, pictured below:



Irina Zhuikova



Ivan Manilo



Sergey Baranovsky



Sergey Voronov



Vladimir Novikov



Vladimir Pankratov



Valery Pimenov



Vladimir Korzanov

Green Cross Russia: Fostering a Civil Society during the Chemical Disarmament Process



Vladimir Pankratov
Director, Green Cross Russia,
Penza Public Outreach and Information Office

In November, the Penza Public Outreach and Information Office (POIO) celebrates its ten-year anniversary. However, Green Cross has been working in the area since 1996, when the Penza local office of Green Cross International was founded. At first, we set up an environmental health camp for children in Leonidovka and Zolotarevka. After that, we expanded quickly. In 1997, work started on studying polluted areas, including areas that were previously the sites of chemical weapons destruction (CWD) in the Penza Oblast. In November 1998, the Penza Public Outreach and Information Office (POIO) was opened and has since striven to ease social tension in the region with regard to the storage and subsequent destruction of chemical weapons. This was achieved by informing the residents of the town of Penza and the Penza Oblast of the environmental conditions in the oblast and by conducting an evaluation of the impact that different facilities could have on the environment (i.e., effects of the operations of environmentally hazardous facilities and building CWD facilities in the oblast).

All of the work done by Green Cross Penza depends on the local residents and local government and municipal agencies in the Penza Oblast to resolve complicated social issues. The organization's slogan is "Cooperation, Not Confrontation."

The history of the long process of preparing for and conducting the CWD process has shown that the conflict of interests between the local residents and the regional and federal authorities lies at the heart of the social tensions.

The residents are interested in having access to complete information about the social, medical and environmental problems related to CWD, particularly with regard to compensation and benefits for living in an area near a CWD facility. These benefits include the development of social and civil infrastructures in the area where the chemical weapons will be stored and later destroyed.

The regional authorities are interested in improving the local socioeconomic conditions by bringing funds from the CWD program into the region.

The Federal authorities are concerned about meeting international obligations stemming from the Chemical Weapons Convention (CWC).

The difference in interests among the different levels of the government and the local population is clear. Efforts to resolve these conflicts began under difficult conditions, as the population was becoming more engaged**.**

The first attempt to build an industrial research CWD facility led to a conflict: social movements were becoming increasingly politicized, and federal authorities were not providing sufficient information. The construction of the facility was suspended by protests, and the project was reconsidered. The result was that the facility never opened,

not even for one day, and the chemical disarmament process was delayed for several years. The reasons behind this include the insufficiently informed public opinion, the lack of any outreach efforts, lack of regard for the interests of the local population, and the failure to keep promises made by local authorities, which resulted in the public's negative reaction and the project's hastened suspension.

This lesson has shown that the chemical disarmament process must account for the interests of the local residents. The concerns of the local population about the construction and operation of CWD facilities were initially based on emotions, since there was no objective information available. Green Cross conducted surveys confirming this. Based on the experience that it has accumulated, Green Cross drafted **a public outreach strategy:**

- Facilitate the safe destruction of chemical weapons that complied with environmental legislation while serving as a neutral, independent social organization.
- Get the public involved in discussions on the CWD process, together with all other interested parties; help establish mutual trust and respect.
- Educate the public, and specifically provide environmental education.
- Protect the rights of the citizens to a safe environment.
- Get the public involved in the decision-making process.

The following efforts are being made under this strategy:

Roundtable discussions with children from the villages of Leonidovka and Zolotarevka on environmental education and fostering a healthy lifestyle among children and their parents. As part of this program, each year an environmental / health camp is arranged for the children. Last year, the Squirrel Camp helped 35 children from Leonidovka, Zolotarevka and Zarechni improve their health.

Each year, Green Cross holds a children's drawing and essay contest on various environmental themes, such as "Water, The Source of Life," and "My Home Region."

Environmental Education Outreach with students in high school and higher education institutions. This work is conducted via lectures and graduation projects. This area of activity is aimed at improving students' knowledge about the process of chemical disarmament as they take courses on the environment and natural resource management.

Working with teachers of biology, chemistry, and other subjects. This work includes holding annual five-day seminars with teachers. The objective is to improve the educators' knowledge about issues that are related not only to the CWD process in the Penza Oblast, but also to other environmental problems, such as environmental pollution, water supply problems, setting up environmentally active groups for children and organizing trips for them out to the east shore of the Sursk water reservoir, in addition to other activities.

Working with officials from government agencies and the local government. Annual six-day seminars are also held under this program. Whenever they have questions, the residents of a particular territory generally approach their local officials first. The official, in turn, must be well informed about the CWD process and the social issues connected to the implementation of the CWD program. During these training sessions, the officials are provided with information about organizations and services to which they can refer citizens for more detailed information and explanations.

Studying and working to rehabilitate environmentally polluted areas. These efforts have been in progress since 1997. Last year we monitored the sites previously used for CWD in the village of Leonidovka and surrounding areas, where environmental rehabilitation had taken place in 2003. At present, work is nearing completion on the environmental rehabilitation of a second area, and there are plans to examine a section of the woods near the Akulka stream.

Working with media representatives. Green Cross Penza's work with "the third authority" has been deliberate and carefully monitored. The annual seminars organized for journalists from the print and broadcasting media have expanded their general knowledge of the problems involved in storing and destroying chemical weapons, and they have also helped prevent a number of technical errors in publications and reports. The focus here is placed on the accuracy of the information that is reported. Errors can distort the meaning of the message and the facts themselves.

Working with the Penza Oblast Office of the Russian Ministry for Emergencies on training the population for emergencies. Work is conducted year-round. Last year, training courses were held for the residents of the villages of Leonidovka and Zolotarevka; they learned what to do in the event of a chemical emergency and were provided with gas masks at personal safety equipment stations.

Involving the local residents in discussions on CWD. As a part of these efforts, public hearings are held on CWD-related problems, other public gatherings are organized, Citizens' Advisory Commissions are formed in regions affected by the storage and destruction of chemical weapons, and annual dialogue events featuring speakers from the global community are held.

The Penza Oblast State Environmental Control and Monitoring Regional Center, which was launched in 2004, has contributed a great deal of assistance to Green Cross in its public outreach efforts. This assistance has included the proactive organization of events with Green Cross and the prompt provision of objective information on the state of the environment in the emergency planning zones located near the Leonidovka facility.

Public Outreach and the Russian Federal Target Program for Chemical Weapons Destruction in the Kirov Oblast



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Two years have passed since the Maradykovsky facility was put into operation. It is time for an interim assessment — specifically a review of the public outreach efforts within the context of the chemical weapons disarmament (CWD) process in the Kirov Oblast.

The Maradykovsky chemical weapons (CW) storage facility is one of the largest toxic agent storage sites in Russia. Until recently, it housed 17.4% of Russia's CW stockpiles and was the second largest arsenal in the country. The facility played a key role in the completion of the second stage of the CWD process in the Russian Federation, which was completed on April 29, 2007, during which Russia bid farewell to 20% of the chemical warfare agents kept on its territory. The facility can be justifiably called unique. This was where the destruction of toxic agents such as VX began and where the method of neutralizing agents inside munitions shells was first used. The failure-proof process at the facility showed that this method fully meets safety requirements, is highly efficient, and offers a comprehensive CWD solution.

The facility is currently incinerating hydrolysate, carrying out thermal decontamination of casings from air-delivered munitions, and destroying solid waste by-products of the CWD process. In 2009, the second phase will be launched at the Maradykovsky facility to neutralize sarin and soman.

These days, few people give much thought to the effort required from scientists, military personnel, and builders in order to design and build, in a short timeframe, a safe CWD process at the Maradykovsky facility.

A well-organized public outreach effort, involving NGOs, local authorities, and the mass media, played a significant role in the successful completion of the second stage of the FTP. The outreach campaign for CWD issues in the area near the Maradykovsky plant was conducted by the Federal Agency on Industry, and is now run by Victor Kholstov, Director of the Chemical Weapons Convention (CWC) Department under the Ministry of Industry and Trade, as well as the Federal Department for Safe Storage and Destruction of Chemical Weapons (FUBKhUKhO), led by Lieutenant General Valery Kapashin, and the command and staff of the Public Relations Group at Military Unit No. 21228.

Over the last decade, public opinion on CW storage and destruction has changed significantly. The first reports of CW stockpiles located on the territory of the Kirov Oblast and Orichev Rayon over the previous 50 years appeared in the press in the late 1990s. This was unpleasant news for the residents of the Orichev Rayon and the neighboring Kotel'nich Rayon — the last time they had heard anything about chemical weapons was in the chapter on World War I in their high school history textbooks. In

order to put an end to speculation and rumors and give the general population complete information on the storage and forthcoming destruction of chemical weapons, the Public Relations Group (PRG) of Military Unit No. 21228 was created in December 1998.

Of note is the 2006 Order issued by the head of FUBKhUKhO stipulating the creation of a PRG at the Military Unit No. 21228 in Kotel'nich. The Mirny PRG in the Orichev Rayon could not sufficiently serve the facility's entire Emergency Protection Zone (EPZ), which spans 900 km^2 and encompasses 150 communities. The main objectives of the PRG are to:

- clarify Russian governmental policy on CWD;
- provide the public and NGOs with information about:
  - public safety and environmental protection measures;
  - the available range of CWD methods, the design and construction of CWD facilities and public works projects in the region where the facility is located;
  - public health, disease control, and preventive medicine projects;
- provide the citizens and the general public with information by way of the mass media, holding public hearings, publishing print media, issuing pamphlets to the public about chemical disarmament issues, organizing meetings, conferences, seminars, round tables, and other communication strategies.

Working with the local residents is the top and all-encompassing objective for the PRG of Military Unit No. 21228.

Public opinion over the time the Maradykovsky facility has been in operation has gone from cautious and distrusting to constructive and collected. False rumors that the surrounding areas were being polluted and that the residents were dying from the effects of toxic substances have been replaced with a clear understanding of the chemical weapons destruction process as a result of an information campaign carried out under the Federal Target Program by FUBKhUKhO, the command of Military Unit No. 21228, staff of the Public Relations Group, and Kirov Oblast newspapers, radio stations, and television channels.

Let us analyze the different stages through which public opinion of CWD has passed in Vyatka. Between 1999 and 2002, due to the lack of reliable information about the CW storage process at Maradykovsky, frightening tales abounded of what was supposedly happening at the Military Unit. This kind of misinformation was supplied by members of the regional office of the Union for Chemical Safety (headed by Andrey Taranov), who were getting it from the residents of the village of Mirny, former military servicemen, and other sources. Scientists issued comments in support of the Union's position and their conclusions elicited panic from the general public. The newspaper *Okno* ("Window") was published in Kotel'nich by the Union and was available throughout Kotel'nich and the surrounding areas. The supposedly reliable information provided in this paper was the basis for the negative attitude that local residents had with respect to CWD at the Maradykovsky facility and that the Public Relations Group encountered in Kotel'nich and its environs. At the time, the PRG was in the process of being established. An exhibit space was furnished and a plan for meetings with the locals was drawn up. In 2000–2001, member of the PRG traveled to most of the Orichev and Kotel'nich Rayon communities within the EPZ with information about the toxic agents stored at Maradykovsky and

about the CWD process that was soon to begin.

The year 2003 was a watershed year for the information campaign in the Kirov Oblast. The law on ensuring public safety and environmental protection in the Kirov Oblast in association with the storage, transportation, and destruction of chemical weapons was passed. That same year, the Gorny CWD facility was put into operation in the Saratov Oblast. These events prompted the publication of articles in the general press that sought to clarify why the CWD process was necessary. Newspapers published information about the types of toxic agents, what symptoms were associated with them, and information about environmental safety. Articles were published that detailed the day-to-day activities at Military Unit No. 21228 (swearing in of new recruits, meetings with the parents of soldiers, etc.), which indicated a willingness on the part of the commanders at the base to be open. Gradually, the haze of secrecy, responsible for many rumors and speculation, started to dissipate. For the first time, information was published about plans to build a plant in the Orichev Rayon similar to the one in Gorny. In 2003, Green Cross Russia opened a Public Outreach and Information Office (POIO) in Mirny. Our PRG took an active part in the outreach effort. In 2003, members of the group were involved in 96 different events and started to regularly publish flyers with answers to questions most frequently asked by the local residents who would be living close to the future Maradykovsky CWD facility. These flyers are still being published today.

In 2004, articles appeared in the press describing new technologies that were going to be used for CWD at Maradykovsky. This caused a new wave of speculation. The Union for Chemical Safety did everything to get the locals to actively resist the construction of the CWD facility in the Kirov Oblast and raised fears over the consequences of potential accidents. The top argument against the facility, according to the activists from the Union, was the human factor, which has been blamed for all man-made catastrophes in Russia.

For the first time, we saw the publications of documents detailing the results of environmental monitoring and public health indicators for populations living near a CWD facility. The expressions “emergency protection zone,” “neutralization of toxic agents,” and others entered the language of journalists covering these topics. Regional publications started to include clear-headed and carefully-weighed commentary from respected researchers and developers of the technologies being used.

In 2004, open meetings were held by FUBKhUKhO and the command of Military No. 21228 with participation of the press, ecologists, and physicians, where the CWD process was discussed in open and accessible terms, as well as the degree of safety of the technologies being used, process monitoring, and what the community stands to gain from its proximity to the facility. At the oblast government level, regularly scheduled meetings and round tables on CWD issues were held, including visits to Kotel’nich and Mirny for town-hall meetings with the local residents. The effort made toward having an open dialogue with local authorities and residents started to yield results. Members of the PRG played an active role in communicating new information about the CWD FTP, CWD technologies, the need for a health protection zone (HPZ) and an emergency planning zone (EPZ) around the CWD facility, social guarantees for the population, etc.

In 2004, the PRG was involved in 125 different events in which 1,500 people participated. The events included visits to various communities in the Orichev and Kotel’nich Rayons. This year, more attention was accorded to teaching the local

population how to use individual emergency protection equipment. Together with local administrations, the PRG members oversaw evacuation and gas mask distribution training in the event that an accident happens at the CWD facility.

The year 2005 was the turning point where reliable, balanced information from professional sources started to outweigh the unbridled imagination of certain crusaders for justice. The laying of the cornerstone of the CWD facility followed by full-on construction of public works projects, which were then put into operation, and most importantly the coverage these actions received in the press, have had a positive impact. The press started to cover the construction of the facility and the job openings at the facility. Questions concerning social issues are among the most commonly posed to PRG members. The residents started asking about the pace of construction of public works projects under the CWD program. That year, journalists of many regional publications and television stations were able to visit the facility for the first time and see with their own eyes the scale and significance of the project. The result was more balanced coverage, with many journalists changing their positions in favor of how the CWD process was going. The experience of a similar facility in Gorny (Saratov Oblast) contributed to the shaping of a positive public opinion. Ecologists initiated a massive information campaign.

The year 2005 was crucial for the PRG. We signed agreements with newspapers and television companies for coverage of events at the Maradykovsky facility. We started publishing and distributing outreach material such as brochures and flyers. In 2005, Group members were involved in 144 events attended by over 5,000 people on CW storage and destruction.

The year 2006 broke all previous records with respect to the amount of information that was made available on CW storage and destruction. A total of 217 pieces were disseminated through print media alone. This was also an election year for the local authorities and chemical disarmament was a recurring topic in the campaigns of several candidates. However, unlike in previous years, when vocal opponents who promised to block the construction of the facility were ushered into the local Duma, this time they saw a complete defeat. The process had been set in motion and nothing could stop it. In 2006, two CWD facilities began operating in Kambarka (the Udmurt Republic) and in Orichev Rayon (Kirov Oblast). There was such an abundance of information on the topic by then that you had to be oblivious to not read anything or see a story about it on television. Members of the PRG played a key role in supplying information. They were involved in 152 different events attended by over 5,000 people on chemical disarmament. Eighteen articles by PRG members were published in the local newspapers *Iskra* and *Kotel'nichskiy Vestnik*, and brochures and flyers that were printed with the approval of the federal government were distributed to local residents. PRG members started to hold regular meetings between the Command of Military Unit No. 21228 with Mirny residents, the purpose of which was to explain the processes that were underway at the facility. The conclusion, based on the results of these meetings, is that the audience was more concerned with social issues (road repairs, hot water distribution, etc.) and there were many questions about jobs at the facility.

The year 2007 was a calm year in terms of communication issues. The PRG had fine-tuned its system for getting information out to the public: an announcement board at the entrance to the Mirny administration building posted regularly updated information about the CWD process; weekly updates were published in local newspapers; articles

by PRG members about the Maradykovsky facility and other outreach materials were published in *Rossiiskaya Gazeta*. The result was that the residents of the EPZ and the residents of the Kirov Oblast in general have a clear-headed attitude toward the progress of chemical disarmament. However, while there were few questions about CWD, there were unresolved social issues that continued to trouble the public. These were concerns having to do with the slow pace of construction of public works projects, promised under the CWD program.

Newspapers did not show as much interest in the facility in 2007 as in 2006 and published just 149 articles about it over the course of the year. This was to be expected, given the regular, accident-proof operation of all systems and services at the facility and the declining interest of the general public in the issue itself. A large number of publications were registered only in connection with the completion of the second stage of CWD in the Russian Federation in April 2007. PRG members were involved in 139 different events, which were attended by approximately 3,000 people. The Group printed 1,000 copies of eight flyers and three brochures, as well as a booklet highlighting the completion of the second stage of chemical disarmament in the Russian Federation. Together with the staff of Green Cross Russia, the Group organized seminars for different groups, including teachers, librarians, ecologists, journalists, and administration officials. The seminars provided the attendees with relevant information on the CWD process.

In 2008, the public's interest in CWD issues grew somewhat. The thermal decontamination unit used to incinerate reaction masses was put into operation and several stalled public works construction projects started up again. Just before the second anniversary of the Maradykovsky facility, an assessment of the facility in terms of environmental and public health impact was published in the press. Social issues were still the top-most concerns and had to be addressed by the members of the PRG and the command of the Military Unit. We have done a lot of public outreach this year: in nine months we have been involved in over 100 events, including various seminars, round tables, and hotlines. We held seminars with teachers, medical workers, and local administration officials and roundtable discussions that brought together journalists and environmentalists. Hotlines were made available to the press and NGO representatives. There were 25 visits just to meet with local residents in Kotel'nich and Orichi. It should be noted that recently, the tone of the meetings with workers, especially in the Kotel'nich Rayon, have become professional and friendly. People have come to trust the information they read in the newspapers or see on television. Today they are more concerned about the future of the facility. They wonder if it will be abandoned to the winds when the work is finished. In 2008, PRG members continued to inform the public about chemical disarmament issues using such tools as the scrolling news tickers on television screens, publications in local newspapers, and joint efforts with the regional information center of *Rossiiskaya Gazeta* and the Green Cross Russia POIO in Mirny.

Over the course of the ten years of the Public Relations Group's existence, its staff members have striven to provide the residents of the Kirov Oblast with information about chemical disarmament issues. We can say with confidence that, thanks to the leadership of Victor Kholstov at the helm of the CWC Department and the work of the experts at FUBKhUKhO, the command of Military Unit No. 21228 and the staff of the PRG, the public opinion in the Orichev and Kotel'nich Rayons in the Kirov Oblast was successfully changed to being in favor of chemical disarmament.

Containment of Pesticides and Agricultural Chemicals and Protection of the Environment and Water Resources in the Pskov Oblast



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Pesticides are chlorinated hydrocarbons used in farming and forestry to prevent blight and deter pests that are harmful to garden plant varieties, vegetables, grains, and industrial crops.

The main purpose of using pesticides in agriculture is to increase harvest yields and improve the appearance of produce. Pesticides are most effective when used in intensive industrial crop farming. The most common plant protection methods include crop dusting when plants are blooming and treating seeds with stimulant solutions.

Pesticide use is associated with the following environmental effects:

- *Dispersion in air during forest and crop dusting — 100%*
- *Success rate when targeting pests — about 2%*
- *Transfer to SOIL — 86%, to AIR — 7%, to BODIES OF WATER — 3.5%*
- *Extermination of beneficial microflora — 1.5%*
- *Absorption into the human body through produce, drinking water, dairy — up to 23% over 15 years.*

In the Russian Federation, professionals working with pesticides must obtain a license to work with hazardous waste by passing a special training course offered by RosTekhNadzor in accordance with Federal Decree No. 340 (May 23, 2002) on licensing activity involving hazardous waste. This decree defines how hazardous waste, including pesticides, must be handled during collection, transportation, storage, classification according to hazard categories, waste generation regulations, definition of health protection zones around storage sites, compliance with procedures for laboratory experiments, and local, public health, and animal health monitoring.

The Plant Protection Service of the RF Ministry of Agriculture is responsible for maintaining an inventory of pesticide stocks and enforcing compliance with pesticide use regulations.

The Russian State Sanitary-Epidemiological Service of the Ministry of Health and the National Nature Protection Agency of the Ministry of Natural Resources are responsible for monitoring public health, environmental protection, and environmental safety in connection with hazardous chemical substances.

However, the data collected by these agencies primarily involves pesticide stocks that are stored in specially designated storehouses, storage sites, and farms, as well as recorded cases of illicit pesticide storage and transport. The agencies are not monitoring or tracking illicit dumping grounds of expired pesticides that were dumped into ravines, forests, old silo pits, or piled in private gardens and on private property throughout the Russian Federation. Current legislation includes no provisions for this type of monitoring.

At this time, government and research publications mention 20,000 tons of unused expired pesticides stored at farms in 70 of the Russian Federation's administrative regions. According to this statistic, on average, each region is storing 285 tons.

A joint Russian-Danish inventory project in 2004 conducted at the initiative of the federal government found 572 tons of expired pesticides stored at 254 storage sites on Pskov Oblast farms. At the same time, the Plant Protection Station has compiled an inventory of only 318 tons of expired pesticides. A total of 123 tons of known pesticides were found, of which 43 tons were Category 1 pesticides, and 28 tons (over 50%) were Category 2. A total of 399 tons of unknown pesticides and mixed pesticides were classified as Category 1 pesticides.

In 2005, 580 tons of pesticides were collected as part of the project from eleven rayons in the oblast, which included over 40 tons of mercury-laden *Granozan*, a seed protectant, and 15.6 tons of liquid pesticides.

According to the Ministry for Civil Defense and Emergencies, the remaining 14 rayons in the Pskov Oblast are home to around 700 tons of pesticides and pesticide mixes stored at known locations. Tree farms were not included in the inventories, and nothing is known about the location of unused pesticides kept by aerial crop dusting companies. Pesticide dumping from the mid-1980s was also not included. Just one of the dumping grounds in the Strugokrasnensk Rayon contains over 1,000 tons of expired pesticides, most of which are considered to be Persistent Organic Pollutants (POPs) and are prohibited from use and sale under the 2002 Stockholm Convention.

Known pesticide storage sites were assessed based on the following parameters: the condition of the packing material and warehouse compliance with RosZdravNadzor regulations. The results are as follows:

- *Good condition of packing materials — 6%*
- *Damaged packing materials — 15%*
- *Torn or missing packing materials — 79%*
- *Warehouse compliance with regulations — One warehouse*
- *Warehouse in good condition, but no ventilation or windows — 8%*
- *Absence of locking doors — 20%*
- *Accessible through window openings — 40%*
- *Significant roof damage — 28%*
- *Walls in two warehouses had caved in.*

Poor pesticide storage conditions such as these pose the following risks and hazards for the local population and the immediate environment:

- *Risk of groundwater and soil contamination within a radius of 500 meters;*
- *Risk of hazardous fumes escaping into the atmosphere on hot days (accompanied by wind dispersal over a distance of 2 km);*
- *Risk of poisoning livestock and wildlife and dispersion by rodents and birds;*
- *Risk of trespassers and children gaining access to the warehouse to pilfer pesticide for subsequent sale at local markets;*
- *Risk of spontaneous combustion as a result of mixing different ingredients, contact with precipitation, or temperature changes at warehouses in poor condition.*

What led to the accumulation of large quantities of expired pesticides in the region?

- Use of pesticides at local farms in quantities lower than those prescribed by manufacturers.
- Increase in weight of original substances due to absorbed moisture during storage in unsuitable warehouses without proper packaging.
- No accurate information about pesticides brought into the region due to misplaced bills of lading.
- Illicit transfer of expired pesticides from other parts of the Russian Federation or adjacent countries.

In light of the situation in the Pskov Oblast, with its stores of expired unused pesticides, we have every reason to presume that this problem exists in other parts of Russia as well. For the time being, no one is making an effort to resolve it, and oftentimes the authorities responsible for the consequences prefer to keep silent on the matter so as to not create problems for themselves. Furthermore, some regions do not have a sufficient number of qualified personnel to address the problem professionally. This is why we believe that environmental NGOs are needed to conduct awareness campaigns in order to uncover the full story of how this issue is playing out across the country.

Green Cross Russia — and its network of regional offices around the country — is well-placed to bring this matter to the level of national significance that it deserves. This issue also stands to benefit from the experience of its staff in addressing social issues in areas where the consequences of the arms race are being eliminated and the chemical weapons disarmament process is underway.

A targeted project is being carried out in the Pskov Oblast to keep an inventory and collect all stores of expired pesticides and pesticide mixes being kept at farms (many of which have ceased to exist). We are also trying to eliminate scattered pockets of pollution and bring all existing sources of pollution and toxic substances to one location. The idea is to concentrate all identified agricultural chemicals in one storage area to prepare them for elimination. However, the oblast budget will be insufficient to pay for the scope of work made necessary by the uncovered volumes of chlorinated hydrocarbons in the area. We need funding from the federal budget or from the Secretariat of the Stockholm Convention to pay for measures to prevent environmental pollution and dispose of POPs.

These facts are cause to turn to international environmental organizations and funds for help in solving the problem. This action would be in alliance with the priorities of the Russian Federation with regard to elimination (liquidation) of unclaimed stocks of expired or prohibited pesticides and agricultural chemicals as stipulated in Russian Federal Decree No.˚1376-r dated September 20, 2008, section XVI.

Toxic Agent Storage Sites in Central Asia

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Central Asia is home to numerous storage sites of toxic agents including manufacturing waste products (heavy metals and rare earth metals, radioactive elements), prohibited pesticides, and other substances. There are over 6.7 billion m^3 of all types of toxic waste stored in Kazakhstan and 110 million m^3 in Kyrgyzstan.

Most of the storage sites in Central Asian countries are in poor condition, both in terms of accessibility to scavengers and in terms of the environmental impact of the toxic agents through the erosion of dams and foundations and seepage into ground waters.

I. Highly toxic long-lived organic pollutants

Highly toxic persistent organic pollutants (POPs) can exist as precursors or be used directly in manufacturing chemical weapons.

There were 114 storage sites for prohibited pesticides in Kyrgyzstan built in the 1960s (see the study by M. Bekkoyunov, 2003). By 2007, according to a study by I. Zhakipova, there were only seven sites in acceptable condition and still in use (in contrast to 21 in 2003), 36 sites were being used for other purposes, and 92 sites were completely decrepit. The theft and negligent handling of prohibited pesticides has led to poisoning cases and deaths (Jalal-Abad Oblast 2004, 2007) while the destruction of a pesticide storage facility by a flood resulted in major fish poisoning in Son-Kel Lake in 1976. There are several major burial sites of prohibited pesticides in Kyrgyzstan: in the Kochkor Rayon (600 tons, half of it is DDT), near crop fields, and in the Suzak Rayon near Ak-Chabyr (1,200 tons) in dangerous proximity to the villages of Boston, Tashtak, Ortoaziya, and Akbash. There are still sites at 46 small landing strips that were used to pre-process and dissolve DDT and other pesticides. Many cisterns and bags with prohibited pesticides were buried at airports.

An investigation conducted by health protection agencies indicated the high content of prohibited pesticides (aldrin, DDT, HCH, dieldrin, heptachloride) in soil at the polluted sites (up to 112,616 mg/kg).

A number of NGOs and local authorities have repeatedly reported the unchecked import of prohibited pesticides (especially DDT) from China and India, which continue to manufacture these substances with permission from international organizations for anti-malarial use.

In **Kazakhstan**, according to the official 2003 inventory, there are 1,543.9 tons of pesticides, most of them unidentified and most likely prohibited; of 140 storage sites only

57 are in operation, and 83 warehouses belonging to SelKhozKhimiya are in complete ruin. Of the identified pesticides, toxaphene accounts for 15 tons stored in the Akkain Rayon in the North Kazakhstan Oblast (M. Ishankulov, 2004). Significant quantities of toxic agents, including pesticides in the Syr Darya at the border with Uzbekistan (DDE 0.340 μg/L, hexachlorane 0.270 μg/L, lindane 0.13 μg/L) contribute to the incidence of malignant tumors and tuberculosis in the area (M. Zh. Burlibaev, D. M. Burlibaeva, 2008).

In **Uzbekistan,** there are 13 registered major burial sites for toxic agents and 467 sites formerly used by aerial crop dusting enterprises. Some of these are located near residential areas. Many of the smaller unregistered storage sites, according to NGOs, are located in the Andijan and Bukhar Oblasts. There have been reports about the dissemination of prohibited pesticides both unintentionally (wind and ground waters) and intentionally (theft). The high cost of imported pesticides is forcing the general population here, like in Kyrgyzstan, to use prohibited pesticides at storage sites.

II. Cyanides

Throughout the 1930s to the 1960s, cyanides were used to fight plague hot spots in the rodent populations in the Tian-Shan and Pamir mountains. Various containers with remnants of the used cyanides are still found today. In Kyrgyzstan, there are some defunct industrial sites where there are remainders of cyanides that were used to clean metals.

The growth of the gold mining industry in Uzbekistan in the 1970s, and in Kyrgyzstan starting in 1994, has been accompanied by the use of cyanides and the appearance of cyanide storage facilities. Kyrgyzstan is also home to the largest storage site of toxic agents in Asia. The site, located just below the melting Petrov-Davydov glacier, belongs to the Centerra (formerly Kumtor) gold-mining operation and holds 110 billion m^3 of waste. As it became clear when a truck spilled 2 tons of granulated sodium cyanide into Issyk Kul Lake, the consequences to public health in the area of cyanide pollution are very serious and include a weakened immune system, hormonal dysfunctions, allergies, and other disorders, complications during pregnancy, and other health problems (R. Tukhvatshin, R. Rozieva, 2003; R. Tukhvatshin, I. Khodjamberdiev, 2006).

Revisiting the Environmental and Moral Aspects of Disarmament



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Ladies and Gentlemen, and Mr. Baranovsky, I would like to thank Green Cross Russia (GCR) for the opportunity to speak at the Tenth Annual Dialogue. In the title of my presentation, I already indicated that I will again be addressing the topic that I selected some time ago because of its complex simplicity, its perpetual significance and its magnitude today. I am grateful to this audience for your tolerance. It is tolerance, after all, that is printed on the spotless white flag above Mount Everest. It is a special, wonderful, and tragic time in which we live. We can either learn to live with tolerance and love for things that are different — different countries, different nationalities, different languages, different religions and different lifestyles — or we can all die together.

Green Cross, Green Cross International, and Green Cross Russia… Its flags portray the living green of the Earth and that same magical symbol of Peace and Mercy. Green Cross is what unites our efforts aimed at the environment, health, and disarmament. Green Cross starts and ends with the environment. There is a common and global environment, there is an environment of the biosphere, the environments of natural and manmade territories, the environments of animals and mankind. Finally, a branch of environmental science that researches the behavior of living systems. Most recently, this field has been united with ethology, which studies the behavior of human populations with regard to the evolution of culture and moral values.

Overcoming aggressive instincts and their realignment of energy in terms of intensifying cultural development is perhaps the last hope mankind has for coping with the environmental catastrophe of the unprecedented decline in morals in order to draw closer the times when nothing clouds our very short, but unique, astonishing, and extraordinary human lives. Unfortunately, the stubborn, global indifference seen today has been accompanied by increased violence on the planet, about which we were warned by Aurelio Peccei, the founder of the Club of Rome in his work *The Human Quality*: "… such disorder has not yet ruled the world, and never before has there been such a large number of different dangers. And all of this because never before has so much confusion held sway in man's mind…. We indeed are all guilty of the world's violence, and it is the duty of all of us to contribute to creating the conditions in which this evil plant can no longer thrive, and destroy our soul even before it does our body."

The word "safety" has literally resonated throughout the world. Officials from executive and other authorities have solemnly sworn to the citizens of their countries that they will have a safe life, in all conceivable and inconceivable aspects. Having pooled their efforts, the global community has finally set out on the path to eliminate weapons of mass destruction. The three-headed dragon patrolling the planet has just nearly lost one of its malevolent heads. The remaining two — bacterial and nuclear — are still

going strong, retaining not the much-talked-about "guarantee of safety," but rather a monstrous, indubitably fatal danger that threatens mankind and all life on Earth. Henry Beston was a true environmentalist without borders who scolded us with the reminder of the other creatures of this planet for which we, according to Exupéry's famous formula, are responsible: "In a world older and more complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear. They are not brethren, they are not underlings; they are other nations, caught with ourselves in the net of time, fellow prisoners of the splendor and travail of the earth." Sadly, we must admit that all our other earthly co-inhabitants are less aggressive than we are. And this aspect of their nature makes them morally superior.

More and more people on Earth are recognizing the fatal dangers of weapons of mass destruction… More and more people now understand that using, producing, and stockpiling these types of weapons is nothing other than immoral. And, of course, it is inhuman in a sense that was previously inconceivable; as long as these weapons continue to exist, they threaten all mankind with inevitable death. Can one doubt that it was more than corrosion alone that forced people to decide in favor of destroying chemical weapons? Can one doubt that nuclear and bacteriological weapons will follow the same path as chemical weapons? Is it possible to doubt that today's generation is doing everything it can around the world in order to ensure that there is a next generation?

Has the time not come to acknowledge that "Thou Shall Not Kill" from the Ten Commandments is a direct reference to the only chance we have to save the Promised Land from monstrous destruction? It seems as though the most important of the Divine parting words to each and every individual were in fact "hidden" before their time in the Ten Commandments. Only when people are faced with a real apocalypse — in which they do not want to believe — will the true meaning of this Commandment be revealed. People wanted to experience the end of the world. In disregarding the Bible, they allowed their actions to be guided by the forces of Evil, which used human hands to pave the road for the end of the world. These very hands are awaiting the hour, the moment when we will be ready, and they will press the button.

It seems I have understood why not all people are concerned about weapons that threaten the very existence of mankind. The fact is that these weapons were created in secret (!) from the people of their own countries and the entire world. Furthermore, the minds, efforts and funds were used in secret (!) in ways that contradict reason and in immeasurable volumes. These expenditures, equivalent to the end of the world, would have stunned the world and not just those of the USSR and the USA had they previously been common knowledge. The protest of the people would have been sufficiently powerful. And the community of civilized people would not be facing what is essentially a "mission impossible" today.

Just as I did at the first Dialogue I attended, I continue to believe that the main topic of our discussions on chemical disarmament — without detracting from issues such as funding, monitoring and public outreach — nevertheless remains, as it were, something that is completely over our heads due to its inherent loftiness and nobleness. It is the topic of disarming our traditionally aggressive world view. Its relevance, unfortunately, continues to grow stronger with sparks of suspicion and hostility among countries. Who is to blame for the fact that yesterday's allies, who put an end to fascism, are now behaving as if they are prepared to engage in a fight to the death? And why should the rest of the world risk dying together with them? Who is driving a wedge between

the nuclear superpowers — Russia and America — upon whom the weightiest of all responsibilities lies: the responsibility for liberating the planet from all types of weapons of mass destruction?

Could it really be that they are doing it themselves? Or is it the mystical forces of Evil? And here is another "or." The newspaper *Argumenty i Fakty* (No. 36, 2008) published a reader's rhetorical question in the "The Voice of the People" column. Mr. Babushkin from Rostov-on-the-Don asked: "I don't understand what the 'hawks' of the world are preparing for. Or is this just some ulterior motive to pump up military budgets?"

Is not the retention of the 'superpower' title a privileged responsibility? This is a title that both Russia and America can now only reaffirm by pooling their efforts to save human civilization from the drastic end for which they themselves set the course.

Green Cross, Green Cross International, and Green Cross Russia… They are inseparable, as environmental problems became global issues long ago. On the covers of its annual proceedings from the Dialogues on chemical disarmament, Green Cross Russia solicitously repeats accessible information about its latest status, tasks, and programs. The openness of information about chemical disarmament and the invitation of Russian and foreign scientists and public and government figures to engage in this discussion, and efforts to expand and strengthen contacts in the international environmental movement are by far not the only assets of Green Cross Russia and its proactive president, Professor Sergei Baranovsky.

Today we can say that the Public Outreach and Information Offices and the Citizens' Advisory Commissions (CAC) created by Green Cross Russia in the areas where the stockpiling and destruction of chemical weapons is taking place, have made the local residents realize that this is a matter of national importance. The experience we have gained from our dialogue with the public is valuable and will doubtlessly contribute to GCR's future efforts.

In literature around the world, in the environment, and in the archetypical philosophy of Good and Evil, there are shared, surprising similarities. Here is one of them.

In 1852, Lev Tolstoy, a 24-year-old count who had taken part in the Russian armed forces in the Caucasus and future artillery officer, wrote his first starry-eyed war story, *The Raid* [Nabeg]. What a title — especially when you consider that the story is about Chechnya!

Two paragraphs startle the reader with Tolstoy's insight both into the sacredness of our natural world, and into the moral significance of our disarmament. The author "moves" with the troops and his thoughts, far from the target of the raid and into the ancestral lands of the enemy: "Only very occasionally could the clang of a heavy gun, the sound of bayonets touching one another, hushed voices, or the snorting of a horse, be heard. By the scent of the wet juicy grass which sank under our horses' feet, by the light steam rising from the ground and by the horizons seen on two sides of us, it was evident that we were moving across a wide, luxuriant meadow.

Nature seemed to breathe with pacifying beauty and power.

Can it be that there is not room for all men on this beautiful earth under those immeasurable starry heavens? Can it be possible that in the midst of this entrancing Nature feelings of hatred, vengeance, or the desire to exterminate their fellows, can endure in the souls of men? All that is unkind in the hearts of men should, one would think, vanish

at contact with Nature — the most direct expression of beauty and goodness."[1]

It is only two paragraphs… I could have ended with them, if I had not accidentally read the unexpected admission of Marina Vlad in the same newspaper mentioned above: "I am TERRIBLY afraid of a new war. And it could happen at any moment! And it infuriates me that whoever is promoting this war is thinking only of getting rich…"

Thank you for your attention.

[1] Leo Tolstoy, P. N. Furbank. *The Raid and Other Stories*. Translated by Aylmer Maude. Oxford University Press, 1999.

Public Health Problems in the Regions of Chemical Weapons Storage and Destruction

Medical and Public Health Services Accompanying Chemical Weapons Destruction -- Health Protection for Facility Personnel. Outcomes and Goals. A Russian Federal Medical-Biological Agency (FMBA) Report



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The Russian federal statutes on chemical weapons destruction (CWD) give top priority to protecting human life, public health, and the environment. The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (CWC) also gives priority to ensuring public safety and environmental protection during the CWD process.

The system created by the Russian Federal Medical-Biological Agency (FMBA) to provide medical support for the CWD process ensures the safety of CWD facility personnel and the residents of the surrounding areas. The system is based on FMBA's practical experience in ensuring safe living conditions for the residents of areas near CWD facilities and in providing medical support to the personnel of industrial sectors that deal with particularly hazardous working conditions, including at facilities that were previously used to develop and manufacture chemical weapons.

In its efforts to meet the main objective of protecting the health of CWD facility personnel and the residents of the surrounding areas, the medical support system is designed to cover a full range of FMBA activities:

- Organization and provision of medical services;
- Execution of state-sponsored medical oversight;
- Clinical research support for hazardous work environments.

These activities are prescribed by Russia's federal statutes on chemical weapons disarmament:

- Decree No.˚421 of the government of the Russian Federation (July 2, 2007) on the definition of responsibilities of federal executive agencies involved in the Russian Federation's execution of international chemical disarmament obligations;
- Decree No.˚128 of the government of the Russian Federation (March 13, 2006) on the measures to be taken by federal executive agencies to ensure the safety of citizens living and working permanently or primarily in emergency protection zones (EPZ) of chemical weapons storage facilities and chemical weapons destruction facilities.

Decree Numbers ˚1156-r (August 21, 2006) and 1745-r (December 6, 2006) approved a list of organizations and territories eligible for FMBA assistance. These territories include areas where CW storage and destruction facilities are located.

At present, the FMBA is organizing medical support for CWD projects at four facilities. In 2008, preparations for medical support services for personnel at the Shchuch'ye facility and residents of the facility's EPZ are expected to reach completion before facility operations are launched. Preparations are continuing at other CWD facilities in Gorny (Saratov Oblast), Maradykovsky (Kirov Oblast), and Leonidovka (Penza Oblast).

Medical support for CWD processes involves nine medical establishments that will provide out-patient and in-patient services, six local agencies and six FMBA departments, which will monitor the health of personnel at the CWD facilities and maintain a presence on facility grounds in order to provide medical assistance and preventive medical services to facility personnel and carry out public health measures, both during normal operations at the facility and in the event of emergency. In order to provide specialized medical assistance in the event of acute chemical poisoning, the FMBA has opened the FMBA Toxicology Center at Clinical Hospital No. ˚123.

The FMBA pays close attention to protecting the health of children in the EPZ. From 2002 to 2007, experts with mobile medical teams from FMBA Children's Clinical Hospital No. ˚38 have examined 8,475 children; 790 children were kept for short hospital stays to complete specialized exams.

The practical work of medical establishments and local FMBA agencies receives research support from two research institutes: the Human Hygiene, Toxicology, and Occupational Pathology Research Institute of Russia (Volgograd) and the Human Hygiene, Occupational Pathology, and Environment Research Institute (St. Petersburg). These institutes have occupational pathology clinics that provide specialized medical assistance for acute chemical poisoning. The Toxicology Institute plays an important role, as its experts are developing antidotes for potential poisoning from toxic agents.

In order to ensure the safety of work processes and compliance with environmental protection requirements, all necessary regulatory acts, training, and methodology documentation has been prepared for use by medical workers and experts carrying out state-sponsored medical monitoring on behalf of the FMBA, who are directly involved in providing medical support for CWD processes.

The FMBA has developed tools and methodologies for diagnosing toxic agent poisoning. The following methods are being used to conduct a professional selection and assessment of the health status of CWD facility personnel and the residents of associated EPZs: pupillometry, coincidence laser spectroscopy, measuring cholinesterase activity levels, immunological assessment of the prevalence of sensitivity to organophosphates, etc. These methods were used to create of databases of biological markers for diagnosing potential organophosphorus compound intoxication within a unified system for the analysis, assessment, prognosis, and monitoring of the health of certain population groups and individuals, as well as their living environments, in order to identify causal links between their environment and their health conditions. Examination results have been entered into corresponding register that contain information about 67,000 individuals.

In addition to the results of diagnostic exams of facility personnel and EPZ residents, the registers also contain personal data for each CWD facility employee, including medical exam data from when the person was hired, exams conducted before and after shifts, periodic medical exams, check-ups, etc.

New antidotes to exposure to organophosphorous agents, superior to available foreign treatments, have been created and are currently in use, including Pelexim, a

combined antidote, Carboxim, a cholinesterase reactivator, and P-10M, a preventative antidote. Pentifin and pedifen are still under development and are designed for use not only during the acute poisoning stage, but also in the somatogenic phase of poisoning for managing serious complications.

The use of unified health monitoring methods at diagnostic and consultation clinics is of utmost importance for obtaining valid conclusions regarding the impact of CW storage and destruction facilities on human health. With this goal in mind, FMBA has developed temporary methodological recommendations for monitoring citizens who live and work in the EPZs of CW storage and destruction facilities. These recommendations have been agreed upon by public health agencies in regions where CWD is underway and approved as a temporary set of regulations.

In 2007, as part of an effort to implement government Decree No. ˚128 (March 13, 2006), the FMBA developed and approved procedural regulations for establishing causal links between the illnesses found in individuals permanently or primarily living and working in CW storage and destruction facility EPZs, as well as regulations defining the status and membership of clinical expert committees. The FMBA also completed the approval and registration with the Russian Ministry of Justice of the FMBA's administrative regulations on performing the government function of organizing public health assessments, establishing causal links between occupational activities and illness (death), as well as causal links between illness, disability, or death with the influence of highly hazardous physical, chemical, and biological factors.

Considering the highly directed action of toxic agents and the by-products of the destruction process, the FMBA considers the use of safe, effective, and certified personal protective equipment by facility personnel to be a key safety measure. The FMBA and the Federal Agency on Industry jointly approved the following documents on November 24, 2006:

- Technical and medical requirements for personal protective equipment for the personnel of chemical weapons destruction facilities;

- Requirements for the use of personal protective equipment for the personnel of chemical weapons destruction facilities.

In September 2008, the Human Hygiene, Toxicology, and Occupational Pathology Research Institute completed its work on personal protective equipment for CWD facility staff. The FMBA issued findings on L-1M, SIZ-2, SIZ-3, and SIZ-5 personal protective equipment sets so that the manufacturer of personal protective equipment would be able to obtain the appropriate permits and documentation from the mandatory certification department.

The State Sanitary-Epidemiological Service of the FMBA, together with specialized FMBA research institutes, carried out a significant part of the work of evaluating CWD facility documentation. Over the last five years, they conducted over 80 expert reviews of design and operation documentation, including of how health protection zones (HPZ) were going to be established. Recommendations from FMBA experts for changes to CWD facility construction plans significantly improved public health and epidemiological safety at the facilities.

Another critical area in which the Agency is active is the development of standards for toxic agents and the by-products of their destruction at facilities subject to environmental and process monitoring. From 2002 to 2008, 67 public health standards

were developed and registered with the Russian Ministry of Justice and then put into force by the Chief Sanitary Inspector. These standards are now part of the accreditation process for analytical and public health laboratories at the facilities and are used by planning organizations when calculating the area of EPZs and HPZs and forecasting the dispersal of pollutants in the event of an accident. Emergency maximum exposure limits have been set for emergency response units and the general population. Emergency maximum exposure limits define the safe time limits and toxic agent concentrations in the outside air and air in the work zone for facility personnel and the residents located inside the area polluted by toxic agents without the use of personal protective equipment.

Analytical monitoring methods have been developed for toxic agents slated for destruction. In the context of industrial public health laboratories at the FMBA public health and epidemiology centers, 21 guidelines are in use for monitoring staff working conditions and environmental conditions around the facility. Also applied are measurement methodologies that were developed by specialized organizations: the State Research Institute of Organic Chemistry and Technology, the Russian Ministry of Defense, and the Industrial Ecology Research Institute. The developed methodology, laboratory equipment, and chemical agent detectors, which were placed inside the main workspaces, all designed to monitor toxic agents at the CWD facilities, help maintain the necessary level of safety for facility personnel and the environment surrounding the facility.

The FMBA is completing the development of official public health regulations for stationing, designing, constructing and operating CWD facilities, renovating buildings and structures and operating CW storage facilities. A draft of these public health regulations has been reviewed by the Federal Agency on Industry and is currently being reviewed by the Chief Sanitary Inspector as it awaits approval.

The main requirements set out in the public health regulations were already successfully implemented during the design stage of seven and the construction of five CWD facilities, and in the designation of HPZs at four facilities. The size of the HPZs is prescribed by decrees issued by the Chief Sanitary Inspector, Genady Onishchenko, based on proposals submitted with substantiations for the proposed area of the HPZs and an accompanying analysis of public health risks.

In addition, at the FMBA's initiative, the executors of the CWD Federal Target Program (FTP) decided to develop, over the course of three years, a set of 28 public health standards for toxic agents necessary for maintaining safe working conditions during the decommissioning of CWD facilities and the elimination of the potential consequences of their operations. These include standards for organophosphates, blister agents, arsenic, and the by-products of the destruction processes used in construction materials and construction waste, incineration residue resulting from the incineration of liquid and solid waste, toxic agent neutralization by-products (reaction masses), and in ambient air and bodies of water. Altogether, approximately 110 public health standards are expected to be developed as part of the CWD FTP.

Overall, the CWD process in the Russian Federation is progressing at a steady pace, on schedule, and in line with international agreements.

Since the four CWD facilities have been in operation, the FMBA's on-site units, process laboratories, and environmental protection laboratories have carried out over 600,000 environmental assessments of facility work zones and the surrounding natural environment. No violations of public health standards in the environment were

registered. It is important to note that there were cases where public health standards were violated when wipe samples from equipment surfaces revealed indicator levels exceeding established standards at three CWD facilities (Gorny, Maradykovsky, and Kambarka). Each time, this occurrence was followed by a careful examination and corrective actions.

Considering the high biological activity of the chemical agents being destroyed, the FMBA considers it mandatory to monitor the health of the local population, carry out public health and environmental monitoring, and review the working conditions of facility personnel. FMBA research institutes work with local health protection agencies to accomplish these tasks both prior to launching the facility and throughout the course of its operation.

For this reason, in 2004–2005, the Human Hygiene, Occupational Pathology, and Environment Research Institute (St. Petersburg) conducted a broad medical assessment in Shchuch'ye (Kurgan Oblast) of a representative sample of people living and working in the EPZ at the CW storage facility and the CWD facility being built at the time, and used special rapid diagnostics methods to assess exposure to organophosphates.

A study of morbidity rates of EPZ residents over the previous five years was conducted using primary medical documents. Reproductive function was also evaluated in the EPZ and in a control region based on specific indicators. An assessment was made of the demographic situation in the EPZ using birth and death statistics over the previous 20 years for both regions. A study of a representative sample showed that in general, the health conditions found in the population were associated with age, gender, and poor living conditions. The overall morbidity levels — including for major categories of illnesses — for working-age residents of the Kurtamysh Rayon (the control area) turned out to be higher than the morbidity rates in the population of the EPZ over all of the years of observation.

Analogous studies are being conducted at other CWD facility EPZs.

Considering that most of the first-response actions to clean up the consequences of potential accidents at a CWD facility would be made by the regional health protection agencies of the local authorities, the FMBA is very concerned about ensuring a high level of emergency response preparedness for all local health agencies.

This is achieved by way of targeted training for medical personnel using a clinical toxicology course sponsored by the FMBA Professional Development Institute, detailed plans for each facility with regard to providing health services to facility personnel and to the local residents in the aftermath of an accident, and scheduled exercises and training sessions to improve how different entities work together in a coordinated response. From 2005 to 2007, FMBA employees participated in eight exercises at CWD facilities. The exercises revealed the need to take additional measures to improve how the institutions involved in providing emergency response medical services operated.

The main objectives of the FMBA toward improving medical support services for the chemical disarmament program in 2008 were to:

1. With respect to standards and regulations:
   - Complete the process of obtaining the Chief Sanitary Inspector's approval and registering official public health regulations for stationing, designing, constructing and operating CWD facilities, as well as renovating buildings and structures and operating CW storage facilities

with the Ministry of Justice.

- Complete the renewal and approval process for eleven public health standards for toxic agents, previously approved by MedBioEkstrem, a federal agency, as well as the approval of new standards for organophosphates; these standards are ready for drafting and have undergone the necessary verification process (toxicology tests).
- Publish a single volume of technical documentation including all public health standards that were approved and registered with the Ministry of Justice in 2002–2008.

2. With respect to medical support services for launching operational units at CWD facilities:
   - Ensure preparedness on the part of FMBA units (medical health center, occupational health laboratory, local agencies) at CWD facilities and consulting services when the operational unit is first launched:
     - the third operational unit of the first construction phase of the Maradykovsky CWD facility (Kirov Oblast) for the incineration of liquid and solid waste, by-products of the neutralization process (organophosphates and reaction masses);
     - the second operational unit of the Leonidovka CWD facility (Penza Oblast);
     - the first operational complex of buildings and structures that are part of the Shchuch'ye CWD (Kurgan Oblast);
     - the first operational unit of the Gorny CWD facility (Saratov Oblast) for the bituminization and electrolysis of reaction masses resulting from the neutralization of toxic agents, expanding the storage site for CWD process waste and expanding storage facilities for dry salts from the Kambarka CWD facility (the Udmurt Republic).

3. With respect to medical research support for CWD processes:
   - °Continue the implementation of unified, integral, as well as specific molecular-genetic methods used to assess health conditions, including changes that take place before diagnosis, in order to provide prompt diagnoses of occupational illnesses presented by the employees that come into contact with organophosphates and other toxic agents;
   - °Provide the FMBA Occupational Medicine Centers with modern, specialized equipment and chemical agents for diagnosing possible exposure to toxic agents and the by-products of their destruction in order to enable an expert review of whether a causal connection exists between the illness and an individual's work at the CWD facility;
   - °Continue studies on modeling organophosphate poisoning and the by-products of their destruction using laboratory animals to test the effects of low-dose exposure to toxic agents on the body for the purpose of defining public health standards (for soil and other environments).

As Russia works to meet its international obligations under the Chemical Weapons Convention, we can see how the medical support service system, which aims to ensure

safe working conditions for CWD facility personnel and protect the health of the people living near chemical weapons storage and destruction facilities, is both dynamic and reliable in the context of the chemical weapons destruction process.

The Role of the Pochep Public Outreach and Information Office in Improving the Health of Children Who Live in the Emergency Protection Zones of the Chemical Weapons Storage and Destruction Facility



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The Bryansk Oblast — and the Pochep Rayon in particular — have found themselves face-to-face with several global environmental problems that are threatening the health of their residents.

- The Pochep Rayon is home to a ***warehouse used to store chemical weapons***, which currently holds 7,547 tons scheduled for destruction by 2012. Construction of a chemical weapons destruction (CWD) facility was underway in Pochep in 2008. Yesterday's plot of land in the woods in the village of Semtsy has been transformed into a multi-storey technological facility before our eyes. Over a dozen specially-installed, massive tower cranes and several small, mobile cranes are currently working at the site. The foundations are being laid simultaneously for all units. The main building already has the frame of its main walls in place. Large bins have been placed around the territory containing gravel that will be used to draw groundwater. A second concrete road has begun to stretch out toward the site from Ramasukha, a three-storey administrative building is now standing, as are a cafeteria (where the final touches should be completed by the end of the year) and a dormitory. The building for an electrical substation is nearly ready for installation. And construction of social infrastructure projects under the CWD program are moving full speed ahead.

- As a result of the ***Chernobyl nuclear power plant accident***, 19 Russian oblasts were exposed to radioactive pollution (56,000 square kilometers, and 2,626,500 people), but the Bryansk Oblast bore the brunt of the exposure (11,700 square kilometers and 467,500 people). Based on 2008 statistics, the Pochep Rayon is home to approximately 3,000 families who were resettled from the zone that was exposed to radioactive pollution. During the resettlement program, no efforts were made to create jobs for resettled residents. This major flaw in the program has meant no jobs and high utilities rates for the homes provided to those who were resettled, pushing the able-bodied population to look for work outside of the Bryansk Oblast. Husbands and sons have moved away from their families to earn money in Moscow and St. Petersburg. This has drastically increased the number of broken and unhappy families. Another result of the Chernobyl tragedy in the rayon includes the continued increase of thyroid disorders among

both children and adults, an increased rate of cancer among the local population (including children), and an increased rate of weak and sick newborns, birth defects, and developmental disorders.

- The Board of the Health Department (December 2007, Bryansk) emphasized that an illness like ***tuberculosis*** is simply unacceptable in a civilized society, but the Bryansk Oblast has a significantly higher rate of this disease than Russia's nationwide average. The worst thing is that the rate of this frightening disease is steadily on the rise among children and teenagers (twice as high as in the Central Federal Okrug).

In line with the implementation of the national Health project in the Pochep Rayon, the birth rate has increased slightly. However, the ***demographic situation*** in the Pochep Rayon has barely changed at all, since the death rate has also increased. Over the past year, the rayon's population has fallen by 500. In 2007, 410 people were born in the rayon, while 920 died, i.e., the mortality rate was 2.2 times higher than the birth rate. As of January 1, 2008, the rayon's population was 44,400 people, 62% of which live in rural areas, where a sharp decline in the population is being observed. There are eleven rural villages that have already become ghost towns, 23 villages where up to five people live, 125 settlements where up to 50 people live, and 21 villages where the population ranges from 200 to 400 people. There are only twelve villages in the Pochep Rayon — the rayon with the largest area — with over 500 residents.

The average monthly salary at large and mid-sized companies in the Bryansk Oblast in July 2008 amounted to RUB 11,342.20 rubles — that average is just RUB 8,122.70 in the Pochep Rayon, and RUB 3,588 per month for agricultural occupations. Living wages were calculated at RUB 3,608 for the Pochep Rayon in 2007, but RUB 3,724 per month meets basic requirements for the able-bodied population, RUB 3,224 for pensioners, and RUB 3,608 for children. That makes it impossible to fully treat or even feed children. In the conditions that are developing, any aid in treatment and healthcare for Pochep Rayon children is needed and welcomed. The rayon's residents have expressed their heartfelt gratitude to Green Cross Russia for its many years of focused work on treating children and providing them with healthcare.

Healthcare and Treatment for Children

Over the course of ten years, the Green Cross Russia's Pochep Public Outreach and Information Office (POIO) for CWD Issues has taken on pediatric health and medical treatment for those living in emergency protection zones (EPZs) near the CW storage site and the future site of the CWD facility. We began this work in 1999 under the supervision of Ms. T. Grozdovaya. Pochep children living near the stockpiles (within a 3–5 km range) and others living within a 20 km radius underwent medical examinations. No deviations were found in the health statistics among children in these groups. Before 2002, the Pochep POIO conducted health examinations for the children in Vladimir and Penza Oblast sanatoriums, in addition to health centers in the Republic of Belarus. In 2002–2008, health examinations were conducted at the Zhukov Sanatorium in the Bryansk Oblast. Over this time, healthcare and treatment was provided to 510 children from the Pochep Rayon.

Starting in 2002, healthcare and treatment for children organized by the GCR Pochep POIO began to include Desna, an annual summer camp for children that focused on the environment and leading a healthy lifestyle. What is special about this camp is that the children undergo ENDOECOLOGICAL REHABILITATION under the LEVIN system, which combines recreation and treatment with environmental education, where most attention is given to the environment and the health of the children.

With regard to maintaining and strengthening the health of the children, the Pochep Public Outreach and Information system adheres to two principles: bringing together all parties who are interested in starting; and completing these efforts with each and every child.

When forming the groups of children for treatment and recreation, we work one-on-one with the teaching teams of schools, the clinical and diagnostics center in Pochep, the Children's Ward of the Central Rayon Hospital and parents. Considering the medical conditions and the family's standing, we put together a group of 30 people for an overall health improvement and treatment program. For treatment at the Zhukov Sanatorium, sick children are selected from low-income and troubled families, the social status and financial standing of which would not allow the parents to provide complete treatment for their children, especially in a resort-type sanatorium. Over 21 days, the children undergo medical examinations and receive treatment for their symptoms. This is complemented by an endoecological rehabilitation program for the children, comprised of educational, environmental, psychological and sports components. When the children leave the sanatorium, each of them undergo additional tests, and their doctors prepare recommendations for continued treatment and health improvement. These recommendations are delivered by the camp instructors to the parents of each child. But work with the children does not end there. With help from the schoolteachers, we continue to watch over the children: we track their absences from school and their symptoms, their participation in daily school life, and progress at school. Practice has shown that our children fall ill significantly less frequently after completing the sanatorium program.

For example, the results of the Pochep POIO's Health program at Zhukov Sanatorium in 2008 are:

From July 15, 2008 through August 4, 2008, thirty children from the Pochep Rayon (Bryansk Oblast) participated in the program at the Zhukov Sanatorium. Their ages ranged from 10 to 15 years. In line with the health improvement plan, the children underwent two examinations at the clinical biochemical labs at the sanatorium: 100% of the children had a complete blood count done with a white blood cell count, a urinalysis, and an EKG. Based on their symptoms and signs, some children were given examinations more frequently. The overwhelming majority of the children presented one type or another of pathological abnormalities in their urine (proteinuria –20%, pyuria –10%, presence of squamous epithelium – 20%). The urinalyses also demonstrated salt content (amorphous phosphates, oxalates, uric acid). The CBC revealed low levels of hemoglobin in 27%, eosinophilia among 23.3%, and an increased ESR among 17%. Electrocardiograms revealed a 30% deviation from normal EKGs. Some of these deviations are possibly a type of age-specific peculiarity. However, one-third of the children's abnormalities are such that they were provided with more in-depth examinations and case monitoring by a cardiologist. All 100% of the children who participated in the program received treatment under the endoecological rehabilitation program based on Professor Levin's method. In

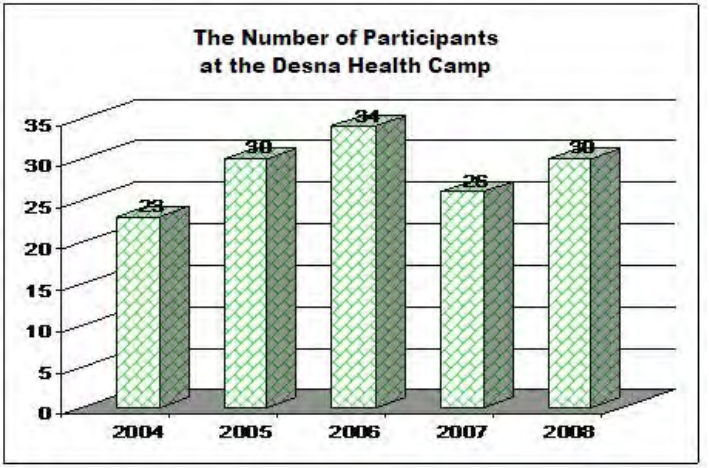
addition to the treatment, the children followed a strict daily routine, a balanced diet, and exercise. CBC results improved for 90% of the children, and the results of the urinalyses improved for 83.3% of the children, while 93.3% gained weight. Subjectively, their sleep habits and appetites improved, as did their tolerance for physical activity.

Desna Summer Camp Statistics, 2008
(30 children)

Questions	☺	😐	☹
Did you like your experience at the summer camp?	30		
Did you learn useful things at camp?	28	2	
Did camp help you feel better?	27	3	
Did camp help you feel more sure of yourself?	27	3	
Are you following your doctor's orders?	28 Yes, at camp.	21 At home, sometimes.	

At the end of the visit:

- each child received recommendations from the group doctor for continued health improvement and medical observations (nearly all of the children were recommended to visit their local pediatrician and undergo an annual sanatorium health program; control urinalyses were recommended for children with health problems, as were diagnostic ultrasounds of the urinary system);
- parents and the health institutions in the rayon were asked to give special attention to the quality of their local drinking water (the mineralization levels).



Based on the results of the health improvement program at the Zhukov Sanatorium, more extensive health programs were recommended for a number of children: 3 in 2006, 5 in 2007, and 6 in 2008. The doctors of Children's Clinical Hospital No. 38 in Moscow examined these children, and concluded that they require treatment in specialized clinics in Moscow. Sometimes a costly treatment is recommended, when parents are unable to bear the financial burden. In this case, we approach the Oblast Health Department and request payment for the child's treatment in a specialized Moscow-based clinic. The Department officials meet us halfway and provide funds for the child's treatment. In 2006, the camp instructors noted that little Sergei was easily fatigued and his lips would turn blue after the slightest physical exertion. After careful examination, it was determined that the boy suffered from three serious illnesses. Little Sergei underwent three operations and is now recovering.

In 2008, Maxim was brought to the camp, having been diagnosed as a "child who gets sick often." After three or four days at the camp, the Central Rayon Hospital received a call reporting Maxim's poor EKG results. The sanatorium's chief doctor immediately arranged for additional examination and a consultation with a doctor from the Zhukov Rayon Hospital. The boy underwent an extensive medical examination and was monitored closely by a cardiologist. He is currently at Moscow Children's Clinical Hospital No. 38 where he is undergoing further examination.

Considering the growing number of genitourinary disorders among children, attempts are being made to identify a connection with the quality of the region's drinking water. The Pochep POIO asked the State Environmental Control and Monitoring Regional Center (SECMRC) involved with the CWD facility in the Bryansk Oblast under the Industrial Ecology Research Institute to conduct an analysis of water samples from the town of Pochep. The Central Environmental Laboratory in the city of Bryansk sent the POIO a report on February 7, 2008 on the qualitative chemical analysis of the water, the results of the analysis and the following conclusion: ***"Elevated content of suspended solids and iron" and a recommendation based on measurements: "The water cannot be used in food without additional purification and is unsuitable for drinking."***

Environmental Education

In addition to the physical state of the children, the instructors at the Desna summer camp devoted their attention to the spiritual health of the children.

The camp's slogan is:
"***You are not the king of Mother Nature, you are her child.***
Take care of the Earth and the Water, and you'll be taking care of yourself!"

The Pochep kids at Desna care for the local spring, they keep the waters clean and make sure the sanatorium's picturesque meadow is tidy — there is nothing more satisfying than singing and playing in a beautiful, clean meadow. They also collect garbage on the sanatorium's property. The importance of their actions became very clear to the children, so much so that when the issue was raised of what to name the environmental section in the newspaper *Pochepskoye Slovo* [The Word of Pochep], the name *The Little Spring* was proposed immediately. The Pochep children have been nicknamed "the Green Kids" at the sanatorium. The Green Kids won't tolerate any running on the lawn or carelessness around flowers and plants. During their stay at the camp, the children learn how to help, both themselves and an ailing tree, they learn the

secrets of nature and the laws of life. These lessons are taught by the Desna instructors in a playful, free and easy manner. For example, the environmental mini-theatre has become a symbol of our camp. "The Adventures of Pinocchio in the Bryansk Woods," "The Frog Queen," "The Tale of Tsar Saltan," and "The Magical Adventure in the Forest Clearing" — these are environmental plays prepared by the children of Pochep and put on for an audience of children and adults at the sanatorium. They serve as a learning tool about nature and an example for children about how to behave in nature.

The Pochep POIO has also set up a highly-qualified team of instructors and medical professionals who work to improve children's health, organically combining and stimulating the physical and mental development of each child. The instructors try to learn about each child before they even arrive at the camp. Their behavior, health, family status, friends — these are all important things to know when working with children.

Starting in 2003, the team of teachers and medical professionals began preparatory work with children and their parents before they visited the camp via a school called "The Ecology of Health." For example, in 2003 we held courses with 20 children and their parents about the Levin program. That year, 40 children attended the camp: 20 who had taken the course, and another 20 newcomers who did not know anything about the Levin system. The results differed and were more positive for the children who had taken the preparatory courses.

One of the Desna Camp's great achievements, and proof of its results, is its participation in the 2006 National Best Russian Summer Camp contest. The Pochep camp took first place at the oblast level and was awarded Diplomat status at the national level for seasonal camps. The Desna summer camp was also presented an award by the Department for General and Professional Education in the Bryansk Oblast.

Orphanage Program

As part of the educational self-awareness program at Desna-2008, it was suggested that the camp counselors consider including the kids from the Rognedinsk Orphanage for children and teenagers. The children from Pochep and the children from the Rognedinsk Orphanage were at the sanatorium at the same time. The goal was to have the Pochep children become acquainted with these underprivileged children, demonstrate an understanding of the family tragedies of each child and the desire to sympathize and do what one could to help make an orphan's life brighter and more cheerful. The children of Pochep did not let us down. The boys and girls of Desna-2008 prepared a concert for the children from the orphanage, and the event became a holiday in and of itself. Contests and games were prepared for the little ones. A "summer fairy" costume was designed for the MC of the concert. The campers shared their stuffed animals with the orphans and unanimously voted to chip in their own pocket money to buy the orphans sweets. The friendliness brought the Pochep children together with the Rognedinsk orphans by the end of the visit. The grateful little ones ran up to their caretakers on the dance floor and in the cafeteria and came to say hello "by shaking hands, like grown-ups," watch and touch the girls' dresses, and sit on their laps like they were big brothers. This experience allowed the Pochep children to feel more grown-up and responsible and contributed warmth and caring for the orphans.

Other Pochep POIO's Activities

In April 2006, we took part in an oblast-wide review-type contest called "Protection

against Environmental Dangers," which was dedicated to the 20th anniversary of the Chernobyl Nuclear Power Plant accident. We took first place in this contest and received another award from the Department for General and Professional Education in the Bryansk Oblast.

In 2006, the Pochep POIO organized a conference on the 20th anniversary of the Chernobyl accident. The POIO's proactive efforts were recognized with a Chernobyl Union of Russia award.

Conclusion

At present, work is underway to increase the number of children receiving medical services and treatment at the Zhukov Sanatorium with financial aid from oblast authorities. The team of instructors from Desna have the opportunities and experience to turn that goal into a reality.

The health improvement program for children includes:

- teaching children about leading a healthy lifestyle;
- developing a system of measures to reduce the risks of illnesses and harm stemming from the social aspects of the children's lives and minimize the impact of stress factors in the children's environment;
- modern health monitoring methods;
- providing the children with the knowledge, know-how and skills needed to make rational decisions when it comes to their health, and protecting and improving a safe and healthy environment for children; and,
- organizing recreational activities for children at the camp while incorporating the results and recommendations from the children's medical and psychological evaluations.

The Pochep Public Outreach and Information Office does everything it can to achieve the key goal of this program: foster a creative child who strives to take care of his physical and mental health.

We sincerely hope that our continued collaboration with the Swiss Government and Green Cross Russia will remain successful and productive. We are doing something very important together: providing healthcare and recreation for children who live in EPZs near chemical weapons stockpiles. The financial standing of the families in this area is not sufficient to cover the full costs of healthcare and recreation for these children.

Regional Medical Assistance under the Federal Target Program for Chemical Weapons Destruction



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In line with international chemical weapons destruction (CWD) obligations, Russia has adopted a Federal Target Program on CWD (the CWD FTP). The most important priorities under the program are ensuring the safety of the CWD process, in addition to protecting and improving environmental conditions. Furthermore, it is expected that at each stage of construction and operations — and after the destruction process has been completed — monitoring will continue to track both environmental conditions and the health of the local residents.

Due to the fact that two CWD facilities are located on the territory of the Udmurt Republic, we face a real challenge with regard to the participation of regional public health authorities in the CWD program throughout all of the stages of this process.

Medical assistance for CWD personnel and the residents of surrounding territories presumes several new tasks in addition to what health and medical personnel ordinarily deal with. I would especially like to mention the need to reinforce cooperation with nature conservation and environmental organizations, the civil defense service, and the need to improve emergency response. Furthermore, it is also very important to foster a common understanding of the problems such as assessing the health and state of the environment, the reasons behind changes in the health of the local population, and the dangers of using certain chemical compounds for industrial and household purposes.

There are other processes that should be factored in when evaluating the health of the people living in areas affected by chemical weapons (CW). First and foremost, this includes the public's increased interest in environmental issues that impact human health (thanks to several previous catastrophes in the country). However, the following are typical of the public reaction: a simplified perception of the reasons causing the changes in public health and a distrust of the authorities when the issue at hand is public health (and the media plays a major role in generating that distrust). Quite often the public connects the changes in public health only to the CWD facility, and does not consider a multitude of other factors present in the region. Sometimes medical examinations are even conducted, but often include only a handful of observations, making it difficult to obtain reliable results. All too often, the media promotes ideas that certain illnesses are related to the CWD facility's operations, and the *post hoc non est propter hoc* principle of logic crumbles.

The main provisions concerning the responsibilities of the Russian federal authorities and their agencies are set out in legislative acts and include: monitoring environmental

conditions at CW-related facilities and in emergency planning zones (EPZs); providing free medical services for facility staff; organizing medical consultation and diagnostic clinics for the residents of the areas near CWD facilities; providing free medical services for people who live in EPZs and who had been affected by chemicals; and providing compensation for damages. Naturally, all of these obligations can only be met at the federal level. And what is left to do at the local level? Environmental monitoring and health monitoring are needed for those who live and work in EPZs.

The key tasks of the regional public health authorities can, consequently, be designated as follows: monitoring of public health and the environment; providing government support for actions and efforts to improve public health conditions for those living and working in regions with CWD facilities, and developing and carrying out efforts to provide general medical services.

Medical consultation and diagnostic clinics are especially important. Their main functions include frequent observation of the people who live and work in EPZs, identification of diseases at various stages, and research to establish connections between illnesses and the CWD facility's operations. Furthermore, the clinics also maintain a register of all of the citizens who live and work in EPZs, provide first aid services for toxic agents, and public health education.

The efforts of the clinic in Kambarka have been documented in the clinic's large volume of research: most of the local residents have been logged in a register, and the clinic performs ultrasounds, endoscopic examinations, x-rays, mammograms, EKGs, respiratory exams, and laboratory tests. There have already been cases of early cancer diagnoses (primarily breast cancer).

Izhevsk Medical Academy has been working with the Udmurt Republic's Ministry of Health and the local public health authorities toward meeting these obligations for some time now.

As early as 1994, the researchers at the Izhevsk Medical Academy set up a database after conducting an in-depth analysis of the medical-demographic situation and extensive examinations of the children in the area.

A total of 700 children underwent medical examinations. The resulting data evidenced the health problems presented by children in various age groups. However, the analyses did not support the hypothesis that the chemical agent warehouse is the source of increased illness rates among the town's children. Very few infants were deemed healthy. Most children in the pre-school and elementary school age groups were categorized as either "at risk" or "sick." Children most often suffered from digestive problems, respiratory disorders, musculoskeletal disorders and blood disorders (such as anemia). The analysis showed that the children's health problems were, to a great extent, related to medical and social problems, socioeconomic issues and public health factors. These factors determine a child's lifestyle at home with his family, in kindergarten, and school, and they also dictate the idiosyncrasies of his diet, sleep habits, exposure to fresh air, etc.

Later, archives were used to conduct an analysis and evaluation of the current state of health among the residents of these areas using medical and demographic indicators, morbidity rates, injury rates, the physical health of children and teenagers and the percentage of disabled persons and how this data correlated with existing manmade factors and the existing levels and quality of medical services in the area. By this time, data had been accumulated over a 15-year period, and was being expanded regularly.

At the same time, an evaluation and an analysis of the correlation between the health of the local residents and public health and other factors are underway. At this stage, a list of harmful substances that had entered the environment from manmade sources was being compiled. All of these efforts helped pinpoint the priorities for continuing in-depth studies of the health of the local population.

One of the most recent projects in the Udmurt Republic was dedicated to typical illnesses and the health of the residents of the Kizner village leading up to the construction of a CWD facility.

Since official statistics on the health conditions of the Kizner residents were not sufficient to clearly divide them into two separate groups — those living near the CW stockpiles ("the pollution zone") and those living further from it ("the clean zone"), this study included a medical and sociological poll of the residents in both zones, followed by a medical exam.

The subjects of the study included both adults and children (families), and the method used to collect data comprised a survey that used specially designed closed-answer questionnaires and an exam performed by a general practitioner, pediatrician, and obstetrician/gynecologist , who also filled out the questionnaire.

A difference was observed in the health self-assessments in the two zones: the "pollution zone" had 36.4 out of 100 people who considered themselves to be in "good" or "satisfactory" health. The "clean zone" had 86.9 out of 100 subjects with "good" or "satisfactory" self-evaluations. However, medical examinations did not reveal any major discrepancies in the number of illnesses per person in the two zones: there were close to three illnesses observed per individual from the "pollution zone," and 3.3 illnesses per individual from the "clean zone."

A comparative assessment of the health of parents and children revealed that a high adult morbidity rate corresponded to an equally high rate among children. If, for example, children exhibited the signs of a digestive disorder, the parents had a chronic form of the illness. Quite often, the same types of complaints were heard. The number one complaint was related to gastric and digestive problems, followed by symptoms associated with neuroses and weakness and fatigue. Frequently, both parents and children presented respiratory problems and allergic reactions.

The high number of undiagnosed precursors of illnesses and illnesses themselves is particularly worrisome. As these symptoms and signs were undetected, they were off the radar for both the parents and the doctors.

We were able to confirm the known proposition that parents who suffer more from illnesses also have sicker children compared to parents who are sick less often. Families in which each adult suffered from four to seven illnesses had children who contracted an average of 2.7 illnesses. If each adult in the family had zero to three illnesses, the children were found to have an average of two. In large families, the overwhelming majority of children (85.7%) fell into health classes III, IV and sometimes V.

Another evaluation was conducted to assess the reproductive health of the women of the Kizner village. Gynecological illnesses were detected among 87.0±5.0% of the women who were examined, and chronic pelvic inflammatory syndrome and benign uterine tumors were found among 10.8±4.9% of the patients. A total of 8.7±4.5% had cervical disorders while 21.7±6.5% suffered from growths found in the ovaries or fallopian tubes. As a result, each woman suffered from an average of 2.1 identified illnesses.

The data listed above is used when working with the local residents, selecting a site for industrial operations in connection with the destruction of toxic agents, and other preparations for this project.

Extensive medical and public health studies in the Udmurt Republic have been published in the *Russian Chemical Journal* (N. Strelkov, et al., The Medical Aspects of Implementing the CWD FTP. A Study of the Health of the Residents in Areas Where Chemical Weapons Stockpiles are Located. *Russian Chemical Journal*, 2002. No. 6. pp.74–82).

Moreover, the data obtained during research efforts in Kambarka and Kizner have laid the foundation for many publications and dissertations. Suffice it to say that the doctoral dissertation of N. Zabrodin, the Chief State Sanitary Inspector of the Udmurt Republic, concerned a comprehensive health-based evaluation of the way in which stressors are formed and scientifically-substantiated preventative measures that could be taken in the areas affected by chemical weapons (N. Zabrodin, Stressors as a Health Problem in Areas Where Chemical Weapons are Located. A doctoral dissertation. Perm, 2007).

Another important factor is the development and introduction of a professional development program for public health professionals and personnel at the Ministry of Internal Affairs on environmental toxicology and environmental health. Public outreach must be equally important and should involve the public in the process of gathering data about primary illnesses and symptoms, involving the members of the Citizens' Advisory Commission (CAC) in the analysis of the state of local residents' health, and providing information to the public about illnesses. These measures would help to improve monitoring efforts with regard to local health conditions in areas affected by CWD, and it would help lessen the tension and anxiety associated with CWD facilities.

Another important component is organizing scientific conferences and seminars in the Udmurt Republic that address the destruction of chemical weapons and toxic agents. These have always been held at a high level and drawn the attention of decision-makers, the media, and the residents of areas affected by CW.

Last but not least, attention should also be given to the training of specialists for medical assistance in relation to the CWD process. These trainings are carried out both at the Institute of Continuing Studies under the Federal Medical-Biological Agency, and at regional institutions of higher education at the request of local public health authorities.

As a result, carrying out all of the provisions of the CWD FTP will help meet all of the obligations to the global community undertaken by the Russian government, and it will also considerably improve the health of people living in areas affected by the CWD process. We believe that medical services are among the most important components of this process, and should include monitoring not only for the population in general, but for families as distinct social units.

A Comprehensive Pediatric Health Evaluation of the Children Living in EPZs near CWD Facilities





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Fifteen minutes will not be enough to convey to you all of the aspects of our large professional team's work at a specialized hospital over the past seven years. We have examined over 11,000 children and teenagers who live in six emergency planning zones (EPZs) near chemical weapons destruction (CWD) facilities. Instead, we will only have time to scratch the surface and present the approaches and methods that have allowed us to meet the requirements of federal law as it applies to medical support within the context of the CWD process.

Let us consider the goals and tasks relating to medical support as they are set out in Federal Law No. 76-FZ on CWD, Section 4, which addresses the general principles of ensuring citizens' safety and protection of the environment during the storage, transport and destruction of chemical weapons and the main tasks associated with these principles. Article 13 of Section 4 specifically addresses the key tasks for ensuring the health of citizens and protecting the environment during the storage, transport and destruction of chemical weapons and reads as follows: "The key tasks for ensuring the health of personnel employed at facilities that hire workers and citizens who live and work in emergency planning zones are: …. clinical consultation and diagnostic services for citizens who live and work in EPZs."

"Clinical consultation and diagnostic services for citizens, consulting and physical examination of citizens at diagnostic centers that are specially created under local medical establishments that will hire specialists from the relevant scientific research institutes, medical centers, labs and specialized treatment facilities as needed in order to:

1) diagnose illnesses at early stages; and,
2) conduct studies in order to establish the links between diseases with CW storage and destruction facility operations."

It is important to point out that this is the first time that Russian legislation has formulated such adequate goals toward safeguarding citizens' health. These goals will be achieved via the comprehensive medical examination of citizens, which includes the following tasks:

1) Identifying and diagnosing illnesses;
2) Treating identified illnesses; and,
3) Establishing the causes of the identified illnesses and their possible connection with CWD facility operations.

In light of the delayed construction of local diagnostic and consultation clinics, at the very first stages of work we had to improvise a process where medical examinations of children and teenagers were conducted by teams of medical specialists that traveled to the areas in question to administer the examinations. These mobile teams used standard lab tests and specialized diagnostic equipment for these examinations, and the collected data was then analyzed back at the clinic. The teams included: a pediatrician, an orthopedic surgeon, an endocrinologist, a neurologist, a gastroenterologist, an allergist, an ENT specialist, a chemist, an ultrasound technician (with ultrasound equipment), a functional diagnostics practitioner (EKG and respiratory function testing equipment), and a nurse practitioner (for taking blood and urine samples and biometrics).

In addition, the results of the mobile teams' physical examinations of children were analyzed at the clinic by such specialists as: a cardiologist, a rheumatologist, an immune system specialist, a pulmonary specialist, a biochemist, a nephrologist, and a medical laboratory assistant.

The examinations involved measuring a relatively large list of blood values: total protein, aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase, alpha-amylase, gamma-glutamyl transferase (GGT), lactate dehydrogenase (LDH), creatine phosphokinase, total bilirubin, conjugated bilirubin, glucose values, uric acid, BUN, triglycerides, total cholesterol, total iron, calcium, phosphates, chloride, potassium, sodium, cholinesterase, protein fractions, IgA, IgM, and IgG antibodies, IgE antibodies, thyrotropins, free triiodothyronine (T3), free thyroxine (T4), thyroglobulin antibodies, and thyroperoxidase (TPO) antibodies.

I would like to point out that the sheer scope of the examination process provided us with the opportunity to identify a relatively wide range of illnesses, the number of which exceeds the number of illnesses reported by patients by 6–8 times.

Table 1 below shows the results of our examinations of children and teenagers in six different EPZs.

Table 1. Annual Pediatric Physical Examinations

Type of Examination	2002	2003	2004	2005	2006	2007	Total
	Number of children from EPZs examined						
By mobile teams	100	2,200	590	2,043	2,492	1,267	8,692
At the local hospital		17	-	67	368	338	790
Total:	100	2,217	590	2,110	2,860	1,605	9,472

Having already completed on-site examinations of a significant number of children and teenagers, our teams of specialists realized that we were essentially making the tasks of local public health institutions even more complicated. We had identified a large number of illnesses in children and were leaving the local medical specialists with the

even more complex job of treating these illnesses. This led us to the decision to bring children to our clinic in Moscow. Their transportation costs were covered by Green Cross.

Comprehensive, specialized clinical lab tests at our clinic helped to identify an even greater number of health problems than the on-site exams. Furthermore, the diagnoses set following these exams were more differentiated and accurate. The most important thing was that our specialists could then not only make the diagnoses but also treat the diseases they found.

Table 2 shows the results of a comparative analysis of the different types of examinations that the children were given.

Table 2. Number of Illnesses Found Relative to the Thoroughness of the Exam

Type of Examination	Number of Illnesses Detected per Patient
Clinical examination by citizens' request at local medical institutions	0.5–1
Clinical examination performed by a mobile team of specialists	2–4
Examination at Children's Clinical Hospital No. 38	6–8

Only the examination at our hospital of a representative group of children (not < 100) from each of the EPZs made it possible to achieve the goals that are set out in the law:

– identify diseases at an early stage when they can be treated effectively;

– provide evidence of the reasons for the most prevalent and typical diseases in the areas in question; and,

– provide a substantiated and etiologically sound diagnosis.

These examinations help identify illnesses at an early stage when they are still responsive to therapy.

The most difficult of the tasks listed above is establishing the cause of a patient's illness. However, with chronic illnesses, it is not possible to establish a reason for an individual health problem without first establishing the causes behind widespread illnesses.

Essentially, the third of the tasks listed above has two components:

1) establishing the causes of widespread illnesses; and,

2) establishing a full range of causes of individual diagnoses.

Which illnesses among children and teenagers need to be diagnosed and treated under free medical service programs for those living in EPZs? According to Article 13 of Law No. 76-FZ on CWD, the main tasks aimed at safeguarding the health of those who live and work in EPZs include providing medical assistance for general afflictions, acute and chronic disorders linked to toxic chemicals, and treatment and rehabilitation for victims of accidents involving CW storage, transport or destruction.

In the context of a CWD facility, the most likely health problems are chronic intoxication with delayed manifestation of disorders. Establishing the reasons for chronic illnesses is a very difficult thing to do. However there are some traits of chronic illnesses that make establishing the causes a little easier. First of all, there would be more than one single case of chronic emissions poisoning from a powerful pathogenic source in a residential zone. This type of poisoning is always widespread. That would make it considerably easier to establish the reasons behind common chronic illnesses caused by facility emissions. After determining the prevalence in the group of subjects of one or another diagnosis, an analysis of the characteristics of the disease in that group is conducted. Then, in the case of chronic poisoning, just about every substance always affects more than one system or organ in the body. That is to say that the children who have been regularly exposed to facility emissions will always have some diagnoses in common. Based on an analysis of all of the children's diagnoses, a common set of symptoms will begin to emerge. Then, toxicology databases are used to search for substances that can lead to similar symptoms.

So what do we need in order to resolve this issue?

Let us consider the principles behind evaluating the pathogenic effect of environmental factors on human health. There is no such thing as an illness without a cause. The overwhelming majority of causes of human illnesses can be found in the environment and manifest themselves as chemical, physical and biological pathogenic factors, the concentrations, levels or amounts of which exceed standard levels (MAC, MAL and TSEL).

Most chemical and physical pathogenic factors can be classified as unconditional and thus have a pathogenic effect practically in any concentration, without any thresholds. A threshold (MAL or MAC) is defined in order to facilitate safety monitoring. However, once introduced, these standard threshold levels take on the role of a law, which is why all of the discussions about so-called non-toxic but above-normal concentrations of pathogenic factors have no legal basis.

Figure 1 demonstrates this using a metaphor of icebergs to relay the difficulties in substantiating and establishing the reasons for widespread chronic illnesses stemming from chemicals.

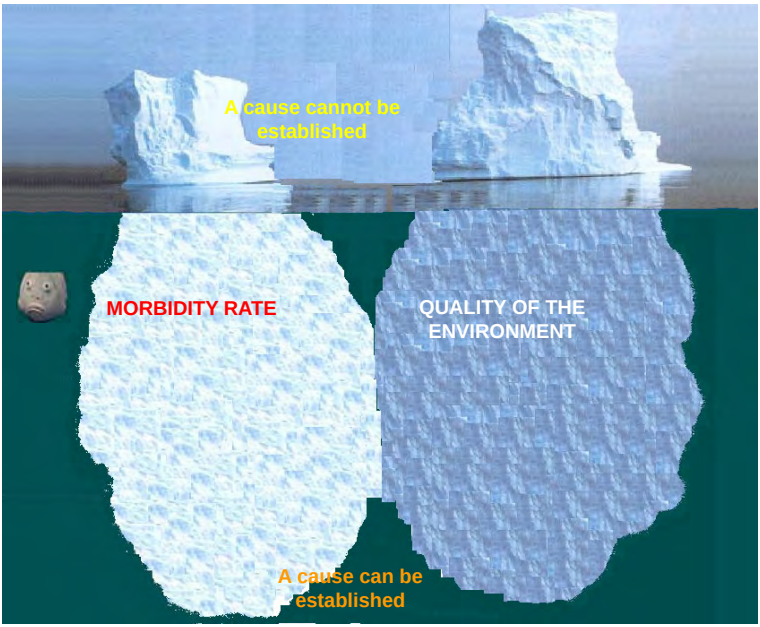


Figure 1

The parts of the icebergs that we see above the water represent the small part of the illness that is identified after citizens visit clinics and an extremely small part of the toxic substances that are measured at specific points in the natural environment by a number of agencies (public health and epidemiological services, divisions of the Ministry of Natural Resources, RosGidroMet, water treatment plants, analysis divisions under the Ministry of Internal Affairs, the Federal Security Service, the analysis divisions of production monitoring, etc). I would also like to note that the law does not limit the list of pathogenic factors to the list of toxic warfare agents that are transported, stored or used at CWD Facilities. The relevant list of pathogenic factors is determined by a list of factors that enter the environment as a result of "operations at chemical weapons storage and destruction facilities." So what we are really talking about is a long list of pathogenic factors that can potentially enter the residential zone as a result of CWD facility operations. Clearly, this list is much longer than the list of toxic warfare agents and includes, in addition to toxic warfare agents, an entire list of auxiliary "chemicals" used at CWD facilities, as well as a list of by-products produced during the course of and at the completion of the CWD process.

It is essentially impossible to establish the cause of a widespread, chronic disease with insufficient information about morbidity rates or the environment. Only specialized examinations of children in a hospital setting makes it possible to identify most illnesses seen in the population (the part of the iceberg in Figure 1 that is under the water) and only by gauging the list of agents against the emissions of a large chemical facility (the part of the iceberg in Figure 1 that is under the water) will give us an opportunity to put forward and substantiate the causes of common chronic illnesses.

Let us take a brief look at the causes that require the specialized examination of a representative sample of patients from the area in question at a Moscow-based clinic.

1) The patient's environment is subjected to the effects of unidentified sources of pathogens, making it possible only to treat the patient with temporary remedies or ease the symptoms.

2) Effective treatment can be provided only if the pathogen source is removed or stopped.

3) After establishing and substantiating environment-related causes of an illness, it is then possible to make targeted decisions regarding the detected pathogen source. If nothing is done about the pathogen source, then there is no point in treating the patient other than temporary relief from symptoms.

In light of these points, funding for the CWD project also needs to cover the costs of sending children to a specialized clinic where, based on thorough examinations with specialized diagnostic equipment, a link between the patient's illness and the emissions from the CWD facility can either be confirmed or denied. Financial assistance commensurate with available funds can be provided not only by public organizations, but by the local administrations of areas where CWD facilities are located to cover the costs of sending children to a specialized clinic.

There is a number of methods used to establish the causes of widespread illnesses. Pollution of the environment and the morbidity rate can be used to help reach an answer. But if there is insufficient information about a person's environment, then one must start from a comparative analysis of the morbidity rate before and after the CWD facility launched operations.

Given a sufficiently traceable pathogenic impact, this is the most effective method. It is necessary to make comparisons between groups of children that are as similar as possible, so as to exclude the possibility of a bias. It is essential to select patients who all fall within the same age range, since there is a relationship between both the morbidity rate and the length of time during which a person is exposed to a facility's pathogenic emissions.

In order to draw a definitive conclusion about the causes of an illness and its link with CWD facility operations, Clinical Expert Commissions have been formed; their members include staff from Children's Clinical Hospital No. 38.

We have conducted a comparative analysis of the range of illnesses found among the children before and after the operations at CWD facilities began in two locations: Kambarka and Maradykovsky. For the purposes of this comparison, we selected a group of children within the same age range. The comparison was conducted for illnesses that are all classified in the ICD-10 (see Table 3).

Table 3. The International Classification of Diseases (ICD-10): Classes

ICD-10 Class	Disease Class Name
I	Certain infectious and parasitic diseases
II*	Neoplasms
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV	Endocrine, nutritional and metabolic diseases

V	Mental and behavioural disorders
VI	Diseases of the nervous system
VII	Diseases of the eye and adnexa
VIII	Diseases of the ear and mastoid process
IX	Diseases of the circulatory system
X	Diseases of the respiratory system
XI	Diseases of the digestive system
XII	Diseases of the skin and subcutaneous tissue
XIII	Diseases of the musculoskeletal system and connective tissue
XIV	Diseases of the genitourinary system
XVII	Congenital malformations, deformations and chromosomal abnormalities
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
XIX	Injury, poisoning and certain other consequences of external causes

Once the class is identified for a disease that has become more prevalent since operations began at the CWD facility, we conducted an analysis of the diagnoses for which the morbidity rate increased. Tables 4 and 5 show lists of the diagnoses that were established based on a comparative analysis before and after CWD facility operations began.

Table 4. Nervous System Disorders Based on Established Diagnoses

affective respiratory paroxysms
vagatonia
secondary myopathy
tension headaches
double hemiplegia
cerebral palsy (pediatric)
insomnia
idiopathic partial epilepsy, paroxysmal complex motor attacks
compensatory internal hydrocephalus
cryptogenic focal epilepsy
muscular dysplasia (facial, trapezius, shoulder, hip)
migraine-like headaches
myelodysplastic syndrome (lumbar enlargement of the spinal cord)

minimal cerebral dysfunction
myopathy (waist and extremities)
neurological sleep disorders
neuropathy of the right tibial nerve (post injection)
lower limb monoparesis
mild lower paraplegia
organic affliction of the central nervous system
perinatal affliction of the central nervous system
persistent muscular dystrophy
consequences of organic afflictions of the central nervous system
postconcussional syndrome
right-side hemiparesis
proximal spinal amyotrophy
psychoorganic syndrome
residual organic affliction of the central nervous system
symptomatic epilepsy, generalized convulsions
Lennox-Gastaut syndrome
vegetative dystonia syndrome
pyramidal syndrome
Wolff-Parkinson-White syndrome (with syncope conditions)
convulsions within anaphylactic shock
tetra-pyramidal syndrome
typical febrile convulsions
chronic tension headaches
vasomotor headaches
epileptic encephalopathy

Table 5. Skin and Subcutaneous Tissue Disorders Based on Established Diagnoses

acne vulgaris (adolescent)
allergic contact dermatitis
atopic dermatitis
erythema multiforme (Devergie's disease)
acquired leukoderma
vulgar psoriasis

hyperhidrosis (excessive sweating)
hyperkeratosis
hyperpigmentation (liver spots)
hypertrichosis
hypertrophic scarring
hypopygmentation
dermatitis
eyelid dermatits
dyshidrosis
dyshidrotic eczema
diffuse alopecia
keloid scars
keratoderma (simple form)
molluscum contagiosum
whiteheads
neurodermatitis
malformation of the nails
impetigo
alopecia areata
paronychia of the second toe on the right foot
perioral dermatitis
pyodermia
plantar warts
burn scars
post-traumatic skin changes
psoriasis
recurrent rash, remission
scarring
seborrheic dermatitis
seborrhea
acne
follicular hyperkeratosis
boils

cold urticaria
chronic idiopathic urticaria

A comparative analysis of the range of established diagnoses was conducted not only for nervous system disorders and diseases of the skin and subcutaneous tissues in the areas near the CWD facilities that deal with nerve agents and blister agents, respectively, but for all classes of diseases. The fact is that emissions from CWD facilities contain anywhere from 15 to 30 toxic agents, none of which are toxic warfare agents. In light of this fact, we need to consider any disease that becomes more common after facility operations begin.

The next stage of analysis involves searching the toxicology database of several hundreds of thousands of substances and the standardized mixtures of the substances associated with the diagnoses made by the clinic and the rate of which has increased since the facility began operating. It is possible to enter requests in the database for more specific symptoms of intoxication and molecular and cellular signs in order to obtain a list of toxic substances.

As a result, we have the ability to provide quality medical support to children and teenagers living in the EPZs of CWD facilities and we are able to meet all of the obligations set out in the law.

There is still, however, one limitation that prevents us from completing the most complex task: establishing a substantiated cause for the diagnosed diseases in connection with CWD facility operations. This is a limitation due to our lack of analytical equipment that would allow us to examine patients' urine and blood in order to identify the toxic agents that we are searching for, or their clinically significant metabolites. This stage is the last link in the chain of evidence establishing the reasons behind illnesses with the effects of a specific pathogenic factor.

Furthermore, analytical equipment would help us to identify the toxic agents we are looking for at different points in the environment. Despite the fact that many organizations and agencies measure toxic substances in the environment, unfortunately we are not able to use that data to substantiate the causes of diseases among children. The problem is that each organization that monitors the quality of environmental conditions is working toward achieving their own tasks, which have little to nothing to do with proving the causes of pediatric illnesses. More often than not, these organizations do not measure the toxic agents that we need in order to complete our studies and do not take samples from the places that we need to monitor, nor do they take samples at the times we are interested in. We would be very grateful to anyone who would help us obtain modern analytical equipment so that we can accurately identify toxic substances and their clinically significant metabolites in the children's biological environments.

Recently, we have seen funding decrease considerably under the CWD program. Sure enough, the CWD facilities were built and began to function as planned. Other public works projects for improving the social infrastructure have also been built, including diagnostic and consultation centers.

However, the drop in Program funding should not affect funding for the medical aspects of the CWD process. We can already see the consequences of chronic intoxication since people have been exposed to certain pathogenic factors; financial support for the medical components of the CWD program must not be reduced.



Valery Pimenov and Alexander Chumakov



Vladmir Leonov

Dialogue Participants in Session







Valentina Nazarenko



German Frizorger



Left to right: Nikolai Kirianov, Alexey Fitin, Vera Troshina



Oleg Lisov and Yuri Drozhzhin



Left to right: Alexander Ivanov, Valery Demidyuk, Vladimir Leonov, German Frizorger, Tamara Ashikhmina, Mikhail Manin



Left to right: Andrey Botov, Svetlana Maslova, Evgeniy Zakharov



Left to right: Vladimir Novikov, Vladimir Konyashin, Vladimir Perevalov, Nikolai Kirianov, German Frizorger, Anatoliy Sorogin, Gennady Knyazev



Vladimir Pankratov

Dialogue Participants in Session





Photos from Desna Summer Camp
(Presentation by Kapitalina Korzanova on the role of the Pochep Public Outreach and Information Office)



We play, compete, and learn.



A young girl's figure is very important. Dasha has scoliosis.



An oxygen cocktail - delicious!



A fort along the Desna River.



The Rognedinsky Rayon Orphanage — playing with the Summer Fairy. She is so pretty and nice!



The Desna-2008 Newsletter.

Morbidity Analysis of Children Living in Emergency Protection Zones of Nerve Agent Storage and Destruction Facilities





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In the modern era, people face a growing global threat from chemical hazards. Some of the reasons include the growing chemical load on society, resulting from the chemical industry's increased production, the widespread use of toxic chemicals in manufacturing, and the chemical weapons destruction (CWD) process under the Chemical Weapons Convention (CWC) of 1993.

The Federal Target Program for Chemical Weapons Destruction (CWD FTP), adopted in 1997, calls for the use of the latest technologies for the disassembly of chemical munitions, the decontamination of toxic agents, and the disposal of the waste and reaction masses resulting from the CWD process. However, it is impossible to reduce the possibility of emergency situations, undetected chemical agent leaks, poisoning cases, and the effects of long-term exposure to sub-toxic levels of toxic agents and by-products of the destruction process to zero. The risk of delayed response to the effect of chemical factors associated with the CWD process is sufficiently high for both facility personnel and the population of the surrounding areas. For this reason, the mere fact that Russia signed the CWC is crucial, since it lent special importance to studying and monitoring the health of children living in emergency protection zones (EPZs) associated with chemical weapons (CW) storage and destruction facilities.

This study was completed by the Environmental Pediatrics Center at Children's Clinical Hospital No. 38 in Moscow (chief doctor Viktor Golodenko, MD) under federal Contract No. UR/06/2159/UZO dated January 19, 2006.

The study's objective was to conduct a comprehensive health assessment of the children living in the EPZ near CW storage and destruction facilities in the Penza and Kirov Oblasts, and design a scientifically-grounded approach to evaluating the effect of CWD facilities on pediatric health in the surrounding areas.

In the case of the Penza Oblast, we analyzed pediatric morbidity rates in Leonidovka (the control zone, next to the facility), and the villages Zolotarevka and Alfer'evka located within the EPZ. In all, 964 children underwent medical evaluations with 264 children from the control zone (Leonidovka) and 700 from the other two villages (400 from Zolotarevka and 300 from Alfer'evka). Table 1 shows a list of medical experts that participated in the evaluations and the equipment the teams used.

Table 1. Medical Team and Equipment

Medical Experts	Equipment
Pediatrician	Clinical examination
Orthopedic surgeon	Foot impression kit
Neurologist	Electromyograph
Endocrinologist	Clinical examination
Gastroenterologist	Clinical examination
Allergist	Clinical examination
ENT specialist	Clinical examination
Ophthalmologist	Clinical examination
Ultrasound technician	Ultrasound
Functional diagnostics practitioner	EKG, RFT equipment
Nurse practitioner	Tools for drawing blood, collecting urine samples, biometrics

The children examined in the study were found to have a higher number of illnesses than indicated by the health statistics kept by the local public health authorities. This was due to the more comprehensive nature of the exams and the presence of highly qualified medical professionals on the teams. No changes in the distribution of pediatric illnesses were found for the EPZ or the control region. We analyzed the findings of health assessments conducted over the last three years (2005–2008), before the start of operations at the CWD facility, which defined the baseline for pediatric health in the EPZ. We identified the main differences in the nature and severity of pediatric illnesses found in this study and the statistical data obtained from the Russian Federal Health Agency (Roszdrav) and the health authorities of the Penza Oblast. We recorded increases and decreases of chloride and phosphorus content in the blood by age group. Statistically significant changes were found depending on the place of residence in the frequency of certain integral homeostasis indicators: concentrations of immunoglobulins (IgM, IgG, IgE, IgA).

In the Kirov Oblast, we examined children in three communities in the EPZ: Mirny (the control region immediately next to the CWD facility), Kotel'nich (10 km from the facility), and Orichi (30 km from the facility). The children in the study were placed in groups according to where they lived. Within the groups, the children had the same level of medical services and nutrition, the same living conditions, and they all came from areas with identical climatic and geographic parameters. The financial standing of the children in the EPZ was also equivalent. This made it possible for us to compare the morbidity levels in the three communities (Mirny, Kotel'nich, and Orichi Rayon in the Kirov Oblast).

Diagnoses were verified using the International Classification of Diseases (ICD-10) according to the most significant 17 classes of diseases.

The approach that provides the kind of data that can be used to issue a comprehensive health assessment of the child population calls for comprehensive medical examinations involving a broad range of medical specialists (see Table 1).

The comprehensive pediatric health assessment in the EPZ showed that only 13.8% of them fall into Health Group I (relatively healthy), 15.4% are in Health Group II (rarely ill), and 66.8% are in Health Group III (frequently ill). The remaining 4% were children that belonged to the Health Groups IV and V. In addition to the main disease, three to seven concomitant diseases were discovered in most of the children.

I would like to say a few words about our findings as classified by health groups. We found that most of the children in Mirny belonged in Health Groups II and III, which means that most children were found to have functional impairments and chronic illnesses in the remission stage. By contrast, children in Orichi were most frequently placed in Health Groups III and IV, indicating that most of the children were found to have aggravated chronic illnesses.

Of the children examined in Kotel'nich (n=433), 22.1% fell in Health Group I of essentially healthy children. Most of the children were in Health Groups II and III (46.1% and 23.1%, respectively). Children in Health Groups IV and V were statistically less common (8% and 0.8%, respectively).

The results of the medical examinations showed that the most common pediatric illnesses in this child population were diseases of the musculoskeletal system (63%), digestive system (41.3%), eyes (30.1%), respiratory system (27.2%), nervous system (27.7%), and the genitourinary system (19%). The next most common disease categories were those affecting the endocrine system (17.8%), and skin and subcutaneous tissue (12.3%).

An assessment by health group reveals the low proportion of healthy children in all of the communities under the study. Functional impairments are most common in young school-age children, while chronic illnesses are most common in older children and teenagers. This trend is the product of many factors and is likely dependent not only on the environment but also on hereditary and constitutional factors, which need further investigation.

In genetics, the basic biological effect of homeostasis is demonstrated in the human body's adaptive ability to dynamically modify its reaction to repeated disruptions in environmental conditions without significantly changing the body's functions. Because all the vital systems in the body (immune, hormonal, and nervous systems) are interconnected, disruptions of homeostatic equilibrium due to environmental factors may be the cause of modified mutagenic effects, which is more likely under the influence of genotoxins that affect all systems.

We know that even in critical situations, the incidence rate and presentation of reactions and illnesses caused or pre-determined by the environment vary greatly. Only 20–25% of children develop a chronic illness that can be directly or indirectly linked to the effects of chemical agents. This is due to the heterogeneity of the child population, which manifests itself as different degrees of physiological adaptation. In any human population, but especially in child populations, we can clearly see a variety of reactions to irritants, ranging from heightened sensitivity, all-out allergy, resistance, or tolerance, and some are moderate reactions. This variety of reactions is a result of hereditary polymorphism of proteins, enzymes, histocompatibility, cell receptors, etc. Almost 20 years ago, when the field of genetic toxicology was quite young, basic research defined the

body's sensitivity to harmful environmental factors as a complex function of the degree of exposure and the defensive functions of the body. Since then, it has become apparent that the field of environmental pediatrics needs more than a record of the intensity and duration of exposure to the offending agent, but also an evaluation of biological factors, such as genetic or hereditary predisposition. The study of mechanisms that control the risk that a child may develop a particular disease based on hereditary predisposition continues to be important in the context of public health. A clinical understanding of the plurality of these risks was formulated in the 1920s in the works of Mikhail Maslov, the Russian pediatrician and member of the Soviet Medical Sciences Academy.

Studies have shown that children with lymphatic hypoplasia are in the highest risk group for developing specific hypersensitivity to low doses and concentrations of xenobiotic chemicals. Because many of the children we examined had this condition, we made a selection of children with lymphatic hypoplasia using the inclusion criteria shown in Table 2.

Table 2. Diagnostic Symptoms of Lymphatic Hypoplasia in Subjects 5 – 7 Years of Age (n=200)

Symptom	Frequency
High biometric values at birth	**34 (17%)**
Uneven increase in body mass in the first year	**190 (95%)**
Irregular body proportions for the first three years	**32 (16%)**
Enlarged lymph nodes	**46 (23%)**

The frequency of acute respiratory infections was used as a clinical marker: in the first group of children, infections occurred no more than 6 times per year while in the second group, infections occurred eight or more times per year. The morbidity rates in the two groups were compared according to the clinical index, which is the ratio of the number of episodes in a given group to the total number of episodes across both groups.

In this group of children, we conducted the genotyping of the tumor necrosis factor-alpha (TNF-α) gene. We selected this particular cytokine, and the gene that encodes it, because it has been studied extensively (there are two types: TNF-α 1 and TNF-α 2), and its role in a variety of illnesses and conditions has been proven. Two alleles of the gene are known: one variant has guanine at position 308 while the other has adenine. The variant TNF-α 1 determines the low production of TNF-α, while TNF-α 2 resulting in high production of the factor (see Table 3).

Table 3. Incidence of TNF-α Alleles

TNF-α Alleles	Study sample	European population
A1/A1	73%	68%
A1/A2	26%	30%
A2/A2	1%	2%

Based on an analysis of immune system status depending on the allelic variant of the TNF-α gene, we found that the correlation of TNF-α and IL-10 cytokines was statistically higher in the group with the heterogeneous genotype. The same group had higher levels of the IgA and INF-α in the serum and showed normal levels of CD4/CD8 T-lymphocyte subpopulations. Together, this indicated that immune response had shifted toward Th1.

Conclusions

1) Children with the heterogeneous variant of TNF-α were more resistant to developing acute respiratory diseases.

2) The apparent resistance to infections is likely linked to the prevalence of Th1 immune response in this group of children.

This population genetics research study enabled us to describe the distribution of allelic variants of the immune response modifier (TNF-α gene) and reveal that the distribution of alleles in this child population followed the European pattern. This study demonstrates the application of a pilot method of genetic monitoring used to evaluate the impact of hereditary predisposition on health in the child population in areas near CW storage and destruction facilities. It will serve as the basis for a comparative analysis of the health of the child population in Orichi prior to the start of operations at the CWD facility and two years after work at the facility is completed.

In conclusion, our analysis of child morbidity rates in EPZs of facilities where nerve agents are stored and destroyed, at this first stage of the study prior to the start of operations at the facility, has not revealed any difference in child morbidity rates in the control region (Mirny) and other communities in the EPZ.

The Results of an Analysis of the Morbidity Rate among Children and Teenagers Residing in the EPZ near Facilities Where Blister Agents are Stored and Destroyed





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Illnesses caused by chemicals are among the most prevalent diseases in Russia. Before our time, the country did not have the proper methods for diagnosing, identifying and treating these illnesses. More often than not, the causes of these illnesses remained unknown, and their treatment was completely ineffective. The study that we are reporting on today is a medical examination program for children residing in emergency protection zones (EPZ) in the Udmurt Republic (specifically the towns of Kambarka and Kizner) in areas where chemical weapons destruction facilities are being built in order to destroy blister agents.

Children are among the least mobile patients, they are forced to stay within local territory, and the illnesses they experience adequately reflect the toxins and pathogenic factors in their environs that may affect them.

In 2004–2008, together with the doctors from the rayon Children's Clinical Hospital in the town of Izhevsk (Udmurt Republic) we examined 3,689 children from EPZs in the towns of Kambarka and Kizner (see Table 1).

Table 1

Town / Village	Visits	Hospital	Total
Kambarka	1,375	259	1,634
Kizner	1,894	161	2,055
Total	3,269	420	3,689

The mobile team of experts included four pediatricians, two neuropathologists, an allergist, nephrologists, an endocrinologist, an ENT specialist, an ultrasound technician and obstetrician, an orthopedic surgeon, and a respiratory function specialist (two of the pediatricians, one neuropathologist, the ENT specialist, the endocrinologist, the

orthopedic surgeon and the obstetrician were from the Children's Clinical Hospital in Izhevsk). Portable medical equipment was used to conduct EMGs, ultrasounds, EKGs, and respiratory function tests.

Results of Comprehensive Physical Examinations of Children Living in EPZs.

Based on an analysis of the breakdown of illnesses according to the International Statistical Classification of Diseases (ICD-10), children from the Kambarka EPZ suffer from respiratory diseases (26%, see Figs. 1, 2), and approximately the same rate of nervous system and gastric disorders (14%). There is a high rate of musculoskeletal disorders and connective tissue diseases (295 children, or 14%) as well as endocrine system disorders (179 children, or 8%).

The children from the Kizner EPZ presented roughly the same morbidity rates as the children from the Kambarka EPZ. Given the same number of patients and the same ratio of girls to boys, the Kizner children presented a higher rate of nervous system disorders (384 children, compared to 297 in Kambarka), nearly twice the rate of skin and subcutaneous diseases (92 and 59 children, respectively). Benign tumors are common (among 13 children in Kizner and 5 in Kambarka), as are birth defects (88 and 73 children, respectively). Children residing in the Kizner EPZ have a rate of urogenital disorders twice as high in Kambarka (69 and 26 children, respectively), including 16 children with kidney development and urinary tract disorders and 4 children with glomerulopathy (see Figure 2).

CONCLUSIONS:

Given the same makeup of the two groups of children (the same number, age and gender ratio) a comparison of the data from the Kizner EPZ with the Kambarka EPZ revealed the following:

- A high rate of nervous system disorders;
- A twice-as-high rate of skin and subcutaneous diseases and urogenital system disorders;
- A higher rate of birth defects and benign tumors:
- Having analyzed the biochemical and immunological research data, no difference was identified between the children living in the EPZs of either town:
- An in-depth clinical examination of the selected children from the Kambarka EPZ revealed the prevalence of digestive tract disorders and infectious and parasitic diseases:
- There are no statistical differences from the overall morbidity rates of the Udmurt Republic as a whole.

Figure 1

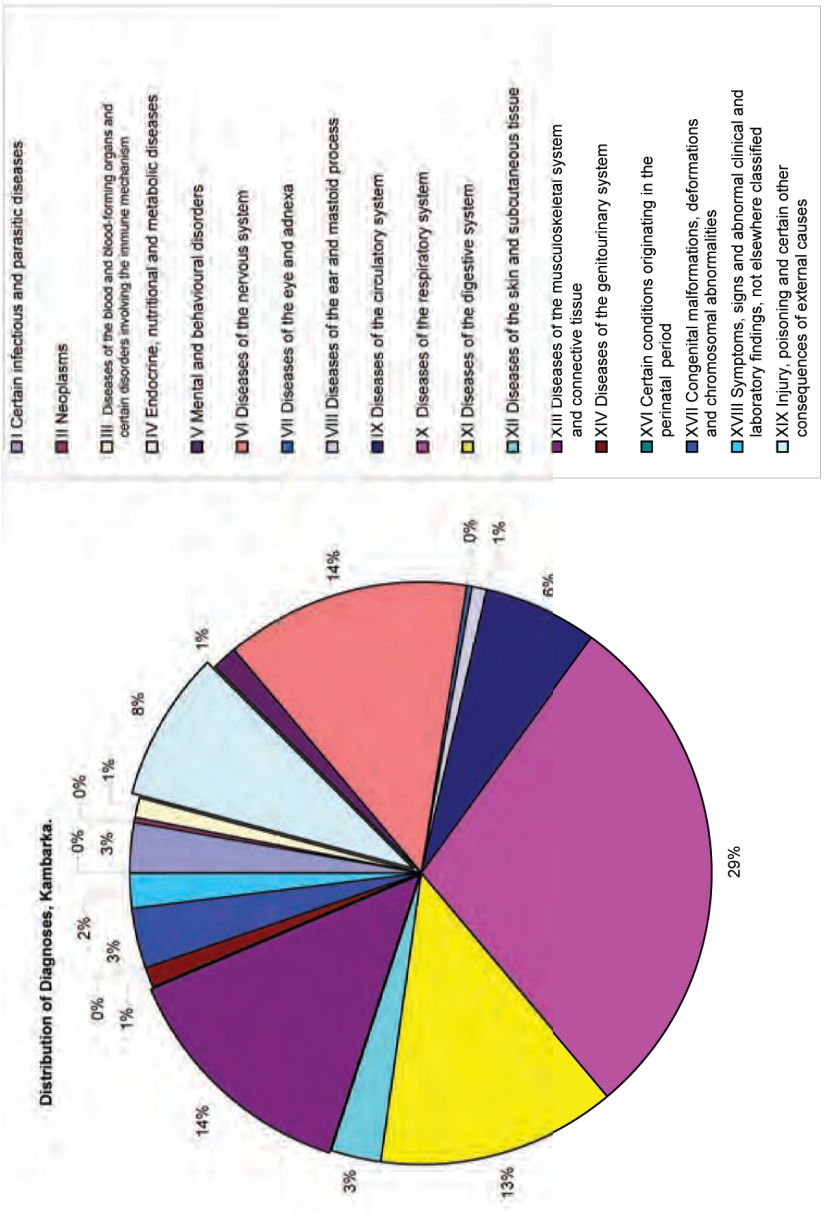
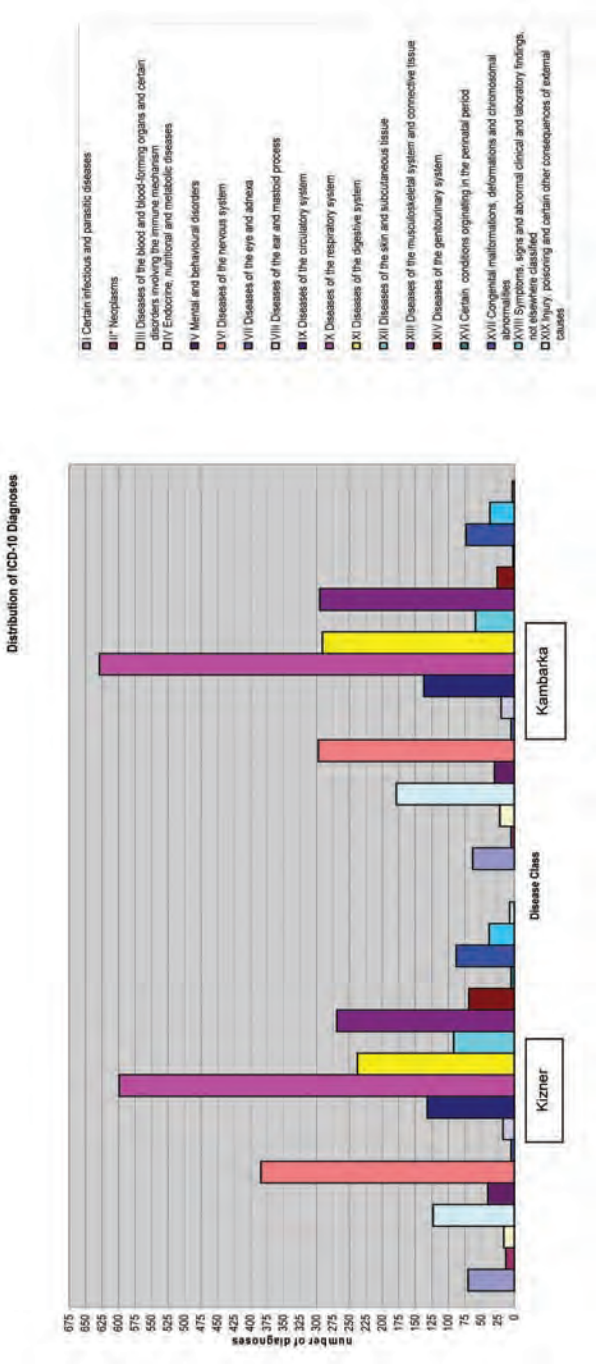

Distribution of Diagnoses, Kambarka.
I Certain infectious and parasitic diseases
II Neoplasms
III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV Endocrine, nutritional and metabolic diseases
V Mental and behavioural disorders
VI Diseases of the nervous system
VII Diseases of the eye and adnexa
VIII Diseases of the ear and mastoid process
IX Diseases of the circulatory system
X Diseases of the respiratory system
XI Diseases of the digestive system
XII Diseases of the skin and subcutaneous tissue
XIII Diseases of the musculoskeletal system and connective tissue
XIV Diseases of the genitourinary system
XVI Certain conditions originating in the perinatal period
XVII Congenital malformations, deformations and chromosomal abnormalities
XVIII Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
XIX Injury, poisoning and certain other consequences of external causes
0%
1%
6%
29%
13%
3%
14%
1%
0%
2%
3%
1%
8%
1%
14%

Figure 2


Distribution of ICD-10 Diagnoses
I Certain infectious and parasitic diseases
II* Neoplasms
III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV Endocrine, nutritional and metabolic diseases
V Mental and behavioural disorders
VI Diseases of the nervous system
VII Diseases of the eye and adnexa
VIII Diseases of the ear and mastoid process
IX Diseases of the circulatory system
X Diseases of the respiratory system
XI Diseases of the digestive system
XII Diseases of the skin and subcutaneous tissue
XIII Diseases of the musculoskeletal system and connective tissue
XIV Diseases of the genitourinary system
XVI Certain conditions originating in the perinatal period
XVII Congenital malformations, deformations and chromosomal abnormalities
XVIII Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
XIX Injury, poisoning and certain other consequences of external causes
number of diagnoses
675
650
625
600
575
550
525
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
Kizner
Disease Class
Kambarka

Conducting Physical Examinations of the Residents of Emergency Planning Zones of Chemical Weapons Storage and Destruction Facilities in Pochep (Bryansk Oblast) and Leonidovka (Penza Oblast)



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Ladies and Gentlemen! Our study was carried out in observance of Russian laws and subordinate legislation passed by ministries and agencies concerning the prohibition and destruction of chemical weapons, measures to protect the people against the potential effects of especially toxic chemical substances, and international agreements on chemical weapons storage and destruction.

In order to produce an objective assessment of the impact of external factors on human health, we developed a comprehensive system for investigating the cause-and-effect relationships between humans and their environment.

The purpose of this report is to describe our approach and the results of medical examinations of the residents [of Pochep and Leonidovka] that sought to identify illnesses that may be connected to organophosphates. We also set out to examine the quality of life and the environmental conditions in order to form a scientific basis for appropriate treatment and preventative measures.

Key Tasks:

- determine the state of health of each individual while accounting for age, gender, and other factors;
- identify people suffering from formally classified chronic illnesses in order to identify risk groups;
- analyze morbidity rates among residents who have been put into risk groups; and,
- identify the reasons causing illnesses.

Organizing and conducting these medical assessments required:

- making a representative selection of the adult population living in the area in which chemical weapons are stored and destroyed;
- conducting a comprehensive specialized medical assessment of the local residents and the public health conditions in which they live;
- conducting retrospective and prospective observation of general morbidity rates, morbidity with temporary disability, and prevalence of chronic somatic and mental and behavioral disorders, as well as quality of life and living conditions; and,
- carrying out specialized medical monitoring.

The group of specialists needed to conduct the medical assessments for the study included: a clinical pathologist, a neurologist, a psychiatrist, a psychologist, a

psychophysiologist, an optometrist, an ENT specialist, an endocrinologist, an allergist, a gynecologist, an STD specialist, a pediatrician, and a biochemist. Based on the needs of the group, other medical specialists will also take part, including a cardiologist, a gastroenterologist and a respiratory physician.

The medical assessments of facility personnel and local residents called for: biometrics, chest x-rays, and pneumotachogram. An evaluation of the state of the cardiovascular, respiratory, and lymphatic and urinary systems, and of the state of an individual's metabolism and immune systems is carried out using computerized systems: a cardiorhythmograph, a spirogram analyzer, a device that measures bilirubin levels, and a laser correlation spectrometer. Computerized psychological and psychophysiological examinations are conducted, including vegetative resonance tests, ultrasounds, EKGs and EEGs. Biochemical and clinical tests include: a complete blood count, a urinalysis, testing for bilirubin levels, ALT and AST, and other tests as needed.

The study included the main indicators that are characteristic of the quality of life among the residents of an emergency planning zone (EPZ) of chemical weapons storage and destruction facilities, including: physical function, general perceived health, vitality, social activity, the impact of emotional problems on day-to-day activities, mental health, self-assesment of how one's health compares with the previous year; an individual's ability to take on physical activity throughout the day (fatigue in the morning, before lunch and in the evening); a subject's subjective evaluation of his or her own health (a self-evaluation based on a scale), a subjective assessment of mood, energy, vitality (satisfaction with living conditions, the extent to which everyday conditions meet one's needs, financial standing, relations with relatives, diet); emotional ability to socialize with others (conflicts at work or at home); a subjective analysis of one's own emotional state, and any changes in one's health evaluation over the course of the past year.

In 2004 and 2007, the town of Pochep (in the Bryansk Oblast) and the village of Leonidovka (in the Penza Oblast) welcomed a team of doctors that conducted a comprehensive evaluation of the health of the residents living near CW facilities. For all participants, a complete blood count, urinalysis, biochemical blood analysis (AST, ALT and bilirubin levels), an eye examination, a laser spectroscopy, and tests to determine cholinesterase levels using a Granat device were done. When evaluating the cardiovascular system, 12-lead rest EKGs were used. Examinations of the mental and behavioral state were conducted using clinical psycho-pathological methods for evaluating mental and behavioral disorders in various states. Biometric data was collected and subjects filled out questionnaires about their everyday living conditions and were also given psychological evaluations.

Information about the results of the physical examinations has been recorded using a unified data entry system approved by Order No. 141z (November 5, 2004) of the Russian Federal Medical-Biological Agency (FMBA). Each medical specialist entered information about key and final diagnoses and recommendations for treatment on each person's outpatient records. The supervisor of the local health authority was given a list of people with deviations found via diagnostic tests, as well as a list of those who require additional tests at diagnostic centers, and emergency or scheduled hospitalization.

Table 1.
Age Group and Gender Distribution of Examined Leonidovka and Pochep Residents

		Town or Village	
		Leonidovka	Pochep
Age 20 – 59		64.2%	68.0%
Gender (%)	Male	28.0%	24.5%
	Female	72.0%	75.5%

Both the male and female groups had a prevalence of those in the 40–59 age group. However, it is also important to consider the relatively high percentage of elderly people.

Our increased interest in the quality of life is related to a theory of modern global problems, decreased fuel and energy resources, and health-related crises among the local populations. A person's everyday life, including spiritual, work, creative, family and other aspects, is accompanied by the exhaustion of an individual's biological, psychophysiological and social energies, which then leads to illness. The quality of life as an integral indicator of a person's physical, mental, emotional and social abilities to function is based on that person's subjective evaluation and is an important indicator of his or her state of health. The quality of life factor speaks to both individual and social variety of a person's needs, and his capacity for well-rounded, harmonious and creative development.

Table 2.
Medical and Social Elements in the Quality of Life of the Residents of Leonidovka and Pochep

	Town or Village	
	Leonidovka	Pochep
Area of living space per family member (square meters)	13 m^2	13 m^2
Living wage	> RUB 2,000/mo	> RUB 2,000/mo
Smoking	19.0%	12.2%
Alcohol consumption	42.9%	47.6%
Lack of exercise	59.1%	51.9%
Married	67.5%	65.4%

Among study participants, the researchers found a high level of satisfaction with family life, diet, housing conditions and material well-being. A strong, direct and statistically reliable correlation was identified between an assessment of one's health and one's material well-being and diet, and a direct, average correlation between one's assessment of health and everyday social and familial relationships.

A direct and strong correlation was also found between a person's assessment of

their own health and their satisfaction with their material well-being, housing conditions, and the lack of any family conflicts ($p < 0.05$).

In Pochep, the questionnaires about living conditions revealed an increase in the number of people living in houses (72.7% in 2007, compared to 42.8% in 2004). Furthermore, the percentage of people living in separate apartments fell by almost twice (26.2% and 48.2%). The living area (square meters) per family member did not change. Most people stated that they had over 13 m² per person (62.9% in 2004, and 69.4% in 2007).

In Pochep, the income per family member increased notably, from an average of RUB 1,500 per month in 2004 for 54.3% of the population, up to 75.4% in 2007. It is worth pointing out that at the time when the study was done in 2007, every third respondent stated that the income earned per family member in his or her household was over RUB 3,000 per month (30.8%).

Income also grew in the village of Leonidovka. In 2004, an income level of RUB 1,500 per family member was noted for 61.6% of the population, up to 84.6% in 2007. Furthermore, the percentage of people who earned under RUB 1,000 per month fell from 11.7% in 2004 to 4.4% in 2007. At the time the study was done in 2007, 45.5% of those surveyed stated income of over RUB 3,000 per family member in their households.

All of the information above speaks to improved welfare of the residents of Pochep and Leonidovka, which falls in line with Russia's national socioeconomic trends.

The most common illnesses seen among those who were examined in Pochep and Leonidovka were digestive disorders, which do not have any correlation with age, but they do show a higher prevalence among men. Liver disease, biliary and bile-duct disorders represent the largest group among digestive system problems, with the same rate among men and women. Chronic gastritis was diagnosed less often, and more frequently among men than women, in the 40 and over group.

The second-most prevalent group of illnesses involved circulatory disorders, and the rate of this group increases with age and more frequently among women. The most common circulatory diseases were hypertension and cardiac ischemia, which are also both more prevalent among women.

Ranked third were disorders affecting the endocrine system and metabolism. These illnesses do not demonstrate any correlation with age, while women are affected four times more often than men. Thyroid disorders represent the largest share of this group, and are more prevalent among women across all age groups.

Next are urogenital system disorders, which were seen more often among women. The rate of this class of disorders was not related to age. Next were respiratory illnesses, which also were not dependent upon age, although men were twice as likely to be affected. Nearly all of the illnesses in this group were classified as chronic non-specific pulmonary disorders, with men more frequently affected than women.

Overall, the diagnoses of health problems among the adult population of Pochep and Leonidovka falls in line with the distribution, level and frequency of deviations registered in their standard physical exam records. Changes in residents' health were related to the age and gender of the subjects and to poor everyday living conditions.

There are no significant differences between the 2004 and 2007 results in terms of the morbidity range and severity, although the number of basically healthy people increased four times.

Table 3. Health of Local Residents Based on the Results of Neurological Examinations

	Town or Village	
	Leonidovka	**Pochep**
Basically healthy	**19.4%**	**28.1%**
Diagnosed mental and behavioral disorders:		
Neurological and behavioral disorders related to circulatory diseases	**43.0%**	**39.2%**
Neurological and behavioral disorders related to musculoskeletal diseases	**25.6%**	**34.4%**
Mental and behavioral disorders related to psychological disorders	**13.9%**	**10.6%**
Paroxysmal disorders of the nervous system	**12.0%**	**9.6%**
Neurological and behavioral disorders connected to injury and other external factors	**5.5%**	**6.2%**
EEGs:		
Normal results	**35.3%**	**30.0%**
Results show change in reaction	**47.1%**	**60.0%**
Epiphenomena	**17.6%**	**10.0%**

Reflex tests. Overall, the groups that were examined presented predominantly good and satisfactory body function and reactivity.

Compared to the data obtained from neurological examinations in 2004, what stands out is the higher rate of nervous system disorders among the subjects due to circulatory system disorders, which is due to the higher number of subjects aged 60 and older.

The state of health among the residents of Pochep and Leonidovka based on psychiatric examinations

Most of the disorders reported by patients and diagnosed among the Pochep and Leonidovka subjects fall into the category of histrionic personality disorders (up to 72.8%).

Objectively diagnosed mental and behavioral disorders are predominantly histrionic personality disorders and demonstrate few if any differences from complaints reported by patients.

Formally classified psychological disorders were diagnosed in half of the subjects. The borderline mental and behavioral disorders that were diagnosed across all age groups included the standard ICD-10 classifications: organic emotionally labile disorder (F06.6 of the ICD-10), disorders of adult personality and behavior (F60.69), schizophrenia, schizotypal and delusional disorders (F20-29), anxiety disorders (F40-41), reaction

to severe stress and adjustment disorders (F43), somatoform disorders (F45 – many disorders that can be put into two different categories are classified as somatoform disorders), and other neurotic disorders (F48 – the same situation with disorders that can fall under two different categories, but with more prevalent neurotic symptoms).

Compared to the data from previous studies, no trends were identified. Complaints reported by patients, just as in 2004, included histrionic personality disorders, and those aged 55 or older reported memory problems. Borderline mental and behavioral disorders included the same ICD-10 classified manifestations as during the previous study, and there was no significant difference based on gender.

The results of psychophysiological examinations

The residents of Leonidovka, based on the results of psychophysiological exams using different methods such as the Bender Visual-Motor Gestalt Test, Schulte-Platonov number tables (an attention test), and the "noise-tolerance" test, and others including reaction to a moving object revealed a predominantly inert (Editor's note: This terminology refers to the Pavlovian theory of nervous system types) nervous system type in all age groups, regardless of gender.

Based on the results of the same psychophysiological tests, the residents of Pochep demonstrated either intermediate (between inert and active) or inert nervous system types across all age groups, regardless of gender.

The data from the psychophysiological exams in Leonidovka and Pochep do not reveal any significant deviations from the studies conducted among the residents of EPZs in other oblasts of the Russian Federation.

Health conditions based on the results of a psychological evaluation

The subjects examined in the village of Leonidovka and the town of Pochep filled out questionnaires about their current state of health and a subjective evaluation of how they related to other people. All groups of subjects demonstrated low markers for all indicators.

The results established that subjects in the village of Leonidovka presented a higher percentage of dissatisfaction with the environmental conditions in the area (46.8%). There were no major differences with the 2004 results.

The R. Cattell IQ test (C.F.2A) is designed to measure an individual's level of intellect, "regardless of cultural influences" (education, environment and cultural idiosyncrasies of those who take the test). The results of the R. Cattell IQ test allowed us to conclude that compared to standardized data, Leonidovka residents have a good level of intelligence.

Psychological exams of the residents of Pochep revealed a latent neurosis, the main components of which could be fatigue neurosis, hypochondria, obsessive-compulsive disorder, or anxiety and depression. The results of the studies have shown that the subjects have a low level of satisfaction with their environmental conditions (44.3%). This group's results from the Cattell IQ test led us to conclude that there is a lower level of intelligence among the residents of Pochep who took part in the study compared to standardized data.

Health conditions based on optometry exams

During exams given to the residents of Leonidovka, it was established that the majority of the subjects presented refractory and adaptation problems, presbyopia and

myopia. The second most common pathology was cataracts. Retinal problems were most often the result of hypertension, diabetes and kidney illnesses. In this case, it is important to note increased arterial pressure as a reason behind changes in the choroids, as confirmed by the results of an examination and vision tests. A total of 26.6 per 100 subjects were deemed healthy by the optometrist.

Compared to the exam results in 2004, the eye health of Leonidovka residents improved slightly in 2007: the number of healthy people increased (19.9) and the percentage of people suffering from cataracts decreased (down from 26.7 in 2004).

The residents of Pochep also presented a high percentage of refractory and adaptation problems, presbyopia and myopia. The second most common pathology was cataracts. Other visual disorders were found in isolated cases among the adult population of Pochep. Results from 2007 showed improved eye health from 2004. Over 60% of the subjects were declared healthy.

Health conditions based on exams by an ENT specialist

Analyses of the results of ENT exams of Leonidovka residents reveal that the most prevalent ear-nose-throat pathology are disorders of the respiratory system, including chronic pharyngitis, which is more common among women than men. The next most common respiratory problem was chronic tonsillitis, which was found to be evenly distributed among both genders, but especially prevalent in the 30–39 age group. The third most common illness is chronic rhinitis, caused by a number of different reasons, which also does not demonstrate any difference in distribution between the male and female groups. The next large group of illnesses identified by the ENT specialists was conductive and sensorineural hearing loss, found to be most prevalent among men and women aged 60 years and over. Men 30 years of age and older often presented a deviated septum, yet without experiencing any respiratory problems. This problem was rarely found among women.

Analyses of the results for Pochep residents established that the most common ear-nose-throat disorder was chronic pharyngitis, which was found to be clearly more prevalent among women than men. The next group of illnesses was conductive and sensorineural hearing loss, found to be more common among both men and women aged 60 and older. Other illnesses of the ear, nose and throat in Pochep were found in isolated cases.

Compared to 2004 results, the health of Leonidovka and Pochep residents in this category improved for practically all categories of ENT disorders.

Health conditions based on dermatological examinations

The most prevalent skin disorder diagnosed in Leonidovka was fungal infections (38.7 per each 100 subjects) among both men and women, especially in the 50 and over age group. Dermatitis and eczema was presented by 12.5 per 100 subjects. This problem was more common among women over 30 and men over 50. Skin infections (abscesses, boils, carbuncles, and acne) were diagnosed for 5.5 of every 100 subjects without any major distribution differences by gender. Growths on the skin and precancerous illnesses (keratomas) were found in isolated instances among those over 60.

In Pochep, 92.3 out of each 100 subjects were more or less healthy based on their dermatological exams. The most common skin disorder was mycosis (2.9 of every 100 subjects), dermatitis and eczema (1.9 of every 100 subjects). This problem was observed more frequently among women over 30 and men over 60. Other skin problems and

derivatives thereof were found in isolated instances.

There were no significant changes from 2004 to 2007 in Leonidovka, while the dermatological health of Pochep residents did improve some.

Health conditions based on gynecological exams

Approximately half of the women examined in Leonidovka were declared healthy after their gynecological exams. Non-inflammatory pelvic disorders were found among women over 30 (14 of every 100 subjects). Non-inflammatory disorders affecting the ovaries, fallopian tubes and round ligaments were observed among 24 of every 100 subjects. Cervical erosion and cervical ectopia were found among women aged 20 to 39 (4.4 of every 100 subjects). Benign growths (uterine fibroids) were diagnosed among women over 40 (7.7 of every 100 subjects).

In Pochep, non-inflammatory pelvic disorders were observed most predominantly among young women (16.3 per 100 subjects). Non-inflammatory disorders affecting the ovaries, fallopian tubes and round ligaments were noted for 1.3 out of every 100 subjects. Cervical erosion and ectopia were diagnosed for women over 40 (7.5 of every 100 subjects). Benign growths (uterine fibroids) were found among women over 40 (2.5 per 100 subjects). Other illnesses were found among 7.5 of every 100 subjects.

Pochep's results in 2007 showed some improvement from 2004, while Leonidovka's results did not demonstrate any significant changes.

Results of medical examinations using standard lab tests and specialized diagnostic equipment: EKGs, ultrasounds, general blood and urine analyses, and tests for ALT, AST and bilirubin levels.

A total of 31.3% of the echocardiograms (EKGs) performed in Leonidovka did not reveal any deviations. Deviations did tend to increase with age. The residents that underwent these tests were most often found to have hypertrophic cardiomyopathy (56.4 of every 100 subjects). The second most prevalent disorder was slowed conduction in the atrium, ventricles and bundle branch blocks (40.9). More rarely found were repolarization disorders in the form of chronic coronary syndrome, electrolytic and diffusion disorders of the myocardium (25.9). Also rare (just 6.6%) were rhythm disorders in the form of atrial or ventricular extrasystoles, wandering atrial pacemaker, and atrial fibrillation. In general, EKG deviations matched the diagnoses made by medical specialists.

Ultrasounds were conducted on a case-by-case basis in order to confirm primary and concomitant diagnoses.

Deviations found in standard lab tests conducted on adult residents matched primary and concomitant diagnoses, among which low hemoglobin levels were the most prevalent (10%). These deviations were most often noted among able-bodied women (30–59 years of age). Deviations in urine analyses, which were the second most prevalent problem revealed by standard lab tests and four times as common among women, were related to pelvic inflammatory disorders in women. In 2.4 instances, the residents who underwent these tests presented elevated bilirubin levels. This is due to pathologies of the hepatobiliary system (gallstones, bile duct dyskinesia, and chronic gallbladder disease), which is a commonly found in this region.

A total of 55.4% of the EKGs performed in Pochep produced normal results. Deviations did tend to increase with the age of the subjects. The most prevalent deviations were hypertrophic cardiomyopathy (20.7 per 100 subjects). The second most prevalent problems included repolarization disorders in the form of chronic coronary syndrome,

electrolytic and diffusion disorders of the myocardium (19.3). The third most common problem was slowed conduction in the atrium, ventricles and bundle branch blocks (13.7). More rarely (just 4.1 per 100 subjects), the EKGs revealed rhythm disorders in the form of atrial or ventricular extrasystoles, wandering atrial pacemaker, and atrial fibrillation. In general, EKG deviations matched the diagnoses made by medical specialists.

Ultrasounds were conducted on a case-by-case basis in order to confirm primary and concomitant diagnoses. The results were included in the medical records of each subject.

Deviations found in standard lab tests conducted in Pochep matched up with primary and concomitant diagnoses. Deviations included low hemoglobin levels (1.6 instances per every 100 subjects). These deviations were most prevalent among able-bodied women aged 20–59. Deviations detected in urine analyses included: protein in the urine (2.2), glucose (0.7), leukocytes (0.7) and erythrocytes (0.4). Elevated bilirubin levels were not found among adult Pochep residents.

Cholinesterase results

No correlation between cholinesterase levels and age was established for either Leonidovka or Pochep residents, although the variance analysis method detected a statistically reliable connection between the age of the subjects and butyrylcholinesterase (BCHE).

The results for Pochep subjects presented the variance of acetylcholinesterase (AChE) and BCHE in the 30–39 age group. This age group also presented the most extreme indicators: AChE (1.08; 1.74; 1.84; 1.84; 1.98); BCHE (0.54; 0.93; 0.94; 0.94; 0.96).

The highest variations were noted among workers (for AChE) and students (for BCHE). The lowest indicators were observed among military servicemen.

A comparative analysis method was used to measure AChE and BCHE in Leonidovka and Pochep residents. No significant differences were identified between the 2004 and 2007 results.

Results of selective pupillometry exams

No statistically reliable differences between pupillometric parameters were found between men and women, which is why subsequent selective exams focused on age groups.

The risk group was identified as people who presented pupillometric deviations from the norm (a markedly decreased diameter of the pupil, markedly decreased reaction amplitude, or a significant increase in the latency time of pupillary response).

The pupillometric results for the residents of Leonidovka and Pochep do not indicate any significant deviations. The deviations that were noted, especially among the older age groups (50–59, 60–69) can be explained by the presence of a somatic illness causing the pupil to shrink and reduce reaction amplitude. A typical case involves cerebral circulation disorders.

A comparison of the 2004 and 2007 pupillometric exams in Leonidovka and Pochep did not reveal any statistically reliable differences.

A medical and environmental monitoring system has been developed and implemented in the areas that were the subject of this study. The system includes:

- a system for carrying out organizational, medical, socio-psychological, socioeconomic, public health, scientific and technical and other measures

aimed at managing medical and environmental welfare of the residents;
- timely evaluations and predictions of changes and prompt implementation of preventative measures against negative impact;
- a comprehensive analysis of the situation in order to establish quantitative functional correlations among health conditions and other factors; and,
- a probability-based forecast of the trends of specific factors that affect health, for example mortality and morbidity rates, taking account of specific environmental factors, such as work conditions, exposure to chemicals or radiation, environmental conditions, etc.

Medical and environmental health monitoring for the local population must include the following measures in order to improve understanding of cause-and-effect connections:
- identifying factors and their impact on the system or systems in the human body, including clinical traits of symptoms and conditions at various stages;
- determining the specificity or non-specificity of changes;
- establishing the sensitivity of a system to certain factors;
- developing criteria to identify early signs of health problems and symptoms; and,
- substantiating the traits (clinical, biochemical, psychophysiological, etc.) of the health conditions of the residents of the areas in question.

As a result, when conducting medical health studies, we apply organizational, scientifically-founded methods and clinical substantiation for our studies in order to establish a cause-and-effect relationship between the impact of harmful chemicals and other factors on human health for those exposed to a variety of living conditions. The main components of the comprehensive program for maintaining the health of those living in the EPZs of CW storage and destruction facilities are:
- conducting scientific research on the fundamental medical, social and psychological aspects of the health of those living in the area and selecting government-backed measures aimed at tracking and predicting the current state of health, safeguarding and improving public health, in addition to identifying health-promoting and pathogenic factors for different formally classified pathologies;
- establishing scientific substantiation of the ways in which the health of the population takes shape, is maintained and is improved, development of social, medical and biological preventative treatment for different illnesses, and monitoring and use of comprehensive methods for assessing risk factors;
- designing complex automated data analysis systems (health registers) in order to evaluate individual and community somatic, psychological and social health;
- defining the indicators and criteria with regard to specific production processes, territories, climate, geographical zones and specific ethnicities; and,
- in the course of establishing cause-and-effect relationships using the approach of conducting a comprehensive medical study based on an assessment of various methods used to assess the state of and changes in peoples' health, i.e.,

the cause-and-effect relationship between humans and their environment.

Conclusions

1. Results of the comprehensive health assessments of the residents of the town of Pochep and the village of Leonidovka have not established any impact on the health of the people living in the EPZs of the nearby CW storage facilities. The level of cholinesterase among adults was found to be in the normal range. There were no changes in the levels of cholinesterase between 2004 and 2007.

2. Individual pupillometry and displacement indicators determined with laser correlation spectrometry matched primary and concomitant diagnoses made by specialist doctors and demonstrated a strong correlation with age. No changes were seen between the data in 2004 and 2007.

3. In general, the disorders and illnesses identified by specialist doctors in Leonidovka and Pochep matched the range, severity and frequency of the deviations registered in public health records. The changes found in the health conditions of the groups that were examined were related to age, gender and poor everyday living conditions. The results from 2007 showed an improvement from 2004.

4. Income per family member has increased significantly. In 2004, income per family member was at an average of RUB 1,500 or more per month for half of the population; in 2007, more than three-fourths of the population earned at least that much monthly. Also significant is the fact that in 2007, more than one-third of those surveyed stated an income of RUB 3,000 per family member per month. This demonstrates improved welfare among these residents, which also matches the general national socioeconomic trends in Russia.

Proposals

1. Develop criteria for an integrated, objective evaluation of the impact of CW storage and destruction facilities on the health of local residents.

2. In light of the increased significance of "the human factor" in modern society and socio-psychological and socioeconomic issues and their role in deteriorating health conditions, it would be advisable to continue research toward improving the comprehensive health evaluation system so that it could be used for systematic monitoring.

3. Prepare proposals for organizational, legal, and financial justifications for the need to establish a public outreach center on territories dependent on the Russian Federal Medical-Biological Agency on-site at the Human Hygiene, Occupational Pathology and Environment Research Institute. Prepare and support the provisions, structure and staff list of this center, which will provide psychological and prophylactic treatment in the relevant areas and contribute to sociological and psychological stabilization.

4. Prepare and substantiate a concept for methods-based scientific and financial support for dynamic, successive and comprehensive observation and maintaining public health records by the appropriate FMBA agencies and temporary diagnostic and consultation

centers in order to optimize examinations and monitoring.

5. Prepare proposals for organizational, legal, and financial support for preventative treatment systems aimed at improving the quality and reliability of the professional performance of CW storage and destruction facility personnel, including development of a program to protect their mental health and occupational psychological health.

6. Design a draft of a professional Federal Medical-Biological Agency program for supporting the mental health of those working at branches and subsidiaries of the FMBA (2009–2013).

Thank you for your attention.

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Abbreviations

ABWR	Advanced Boiling Water Reactor
ADE	Plutonium Production Reactors
ALT	Alanine Transaminase
AMEC	Arctic Military Environmental Cooperation
Am	Americium
AMB	A type of (slow neutron) nuclear reactor
ANCLI	National Association of Local Information Committees
Atomenergoprom	State-owned holding company that unites Russian civil nuclear industry
AtomFlot	A type of Russian nuclear icebreaker; also, refers to Murmansk Shipping Company that operates the this type of icebreakers
BAM Railway	Baikal-Amur Mainline Railway in Eastern Siberia and Far East
BioSNG	A synthetic fuel in gas form
BN	A type of reactor that can operate as burner or breeder by replacing the (U) uranium blanket with a stainless steel blanket.
BNPP	Balakovskaya Nuclear Power Plant
BtL	A synthetic fuel in liquid form
BTGR	Base Tariff General Rates
BWR	Boiling Water Reactor
CANDU	CANada Deuterium Uranium; a pressurized heavy water reactor
CDP	Comprehensive Dismantlement Program
Cf	Californium
CIS	Commonwealth of Independent States
Co	Cobalt
COWAM	Community of Practices Concerning Radioactive Waste Management
CNPP	Chernobyl Nuclear Power Plant
CRESP	Coordinated Research and Environmental Surveillance Program
Cs	Cesium

CTBT	Comprehensive Test Ban Treaty
CTBTO	Comprehensive Test Ban Treaty Organization
CTR	Cooperative Threat Reduction Program
CWD	Chemical Weapons Destruction
DLR	German Aerospace Center
DNA	Deoxyribonucleic Acid
DOE	United States Department of Energy
EBRD	European Bank of Reconstruction and Development
EEE	European Centre of Renewable Energies in Güssing
EEC	European Energy Community
EGP	A model of a graphite-moderated boiling-water nuclear reactor for combined heat and power
EIA	Environmental Impact Assessment
EIA – US	United States Energy Information Administration
EKOMET-S	Russia's only specialized metal radwaste treatment and disposal plant
EnergoSetProekt	An Armenian institute working to construct a nuclear power plant
EPR	European Pressurized Reactor
EREC	European Renewable Energy Council
EU	European Union
Eu	Europium
EUR	Euro
EURT	Eastern Urals Radioactive Trace
EUROCLI	European Commission of Local Information Committees
FBR	Fast Breeder Reactor
FGU	Federal State Institution
FGUP	A federal state-owned franchise
FNPP	Floating Nuclear Power Plant
FSB	Russian Federal Security Service
FSI	Federal State Institution

FTB	Floating Technical Base
FTP	Federal Target Program
FZ	Russian federal law
GBWR	Graphite-Moderated Boiling Water Reactor
GCCH	Green Cross Switzerland
GCI	Green Cross International
GCR	Green Cross Russia
GDP	Gross Domestic Product
GFR	Gas-Cooled Fast Reactor
GGUSA	Global Green USA
GMO	Genetically Modified Organism
GNTs	A state scientific center
GO ChS	Russian Civil Defense and Emergencies Service
GosSanEpidNadzor	State Sanitary-and-Epidemiologic Inspectorate
GosAtomNazdor	Federal Nuclear and Radiation Safety authority of the Russian Federation (It was known before 1991 as GosAtomEnergoNadzor)
GosKomGidromet	State Committee on Hydro- and Meteorology of the USSR
GosSanNadzor	Sanitary Centers for Hygiene and Epidemiology under the Ministry of Health
GosStroy	See RosStroi
GKhK	Mining and Chemical Combine
GRTsAS	Russian State Center for Nuclear Shipbuilding
HDMA	Healthcare Distribution Management Association
HEU	Highly Enriched Uranium
HLW	High-Level Waste
HPP	Hydroelectric Power Plant

HPZ	Health Protection Zone
IAEA	International Atomic Energy Agency
IASAP	International Arctic Seas Assessment Project
IBRAE	Institute of the Safe Development of Nuclear Energy under the Russian Academy of Sciences
IMB	International Maritime Bureau
INES	International Nuclear Event Scale
INFORSE	International Network for Sustainable Energy
INPRO	Innovative Nuclear Reactors and Fuel Cycles
IRG	Inert Radioactive Gases
ISO	International Organization for Standardization
JSC	Joint-Stock Company (can be open (OJSC) or closed (CJSC))
K	Potassium
KChKhK	The Kirovo-Chepetsk Chemical Combine
KhMAO	The Khanti-Mansiisk Autonomous Okrug
KoAES	The Khanti-Mansiisk Autonomous Okrug
KSC	Kola Science Center
KW	Kilowatt
LBR	Lamin B Receptor, an integral protein of the inner nuclear membrane
LEU	Low-Enriched Uranium
LFR	Lead-Cooled Fast Reactor
LLW	Low-Level Waste
LNPP	Leningrad Nuclear Power Plant
LRW	Liquid Radioactive Waste
LWR	Light Water Reactor

MAC	Maximum Allowable Concentration
MChS	Emergency Situations Ministry
MinAtom	Ministry of Atomic Energy of the Russian Federation
MKER	The next advanced reactor after the RBMK in development of pressure-tube reactor facilities in Russia
MLW	Mid-Level Waste
MNEPR	Multilateral Nuclear and Environmental Program in Russia
MNTTs	International Science and Technology Center (ISTC)
MOU	Memorandum of Understanding
MOX	Mixed Uranium-Plutonium Oxide Fuel
MSM	Methylsulfonylmethane
MSR	Molten-Salt Reactor
MVEK	Inter-agency Commission for Assessing Radiation and Seismic Safety of Underground Nuclear Explosions
MW	Megawatt
NATO	North Atlantic Treaty Organization
NDEP	Northern Dimension Environmental Partnership
NDMA	Nitrosodimethylamine
NFC	Nuclear Fuel Cycle
NGO	Non-Governmental Organization
NII	Scientific research institute
NIKIET	Dollezhal Research and Development Institute of Power Engineering
NNEE	Non-Nuclear Explosive Experiments (aka. Sub-Critical Experiments)
NM	Nuclear Materials
NPP	Nuclear Power Plant

NPT	Nuclear Nonproliferation Treaty
NRB	Radiation Safety Standards
NRC	United States Nuclear Regulatory Commission
NRES	Non-traditional Renewable Energy Source
NRPA	Norwegian Radiation Protection Authority
NSS	Nuclear Service Ship
NTs	A science center
NWR	Northwest Region of Russia
NZKhK	Novosibirsk Chemical Concentrate Plant
OECD	Organization of Economic Cooperation and Development
OJSC	Open Joint Stock Company
OSK	United Shipbuilding Corporation
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OSPORB	Basic Sanitation Regulations for Ensuring Radiation Safety
OYaRB	Nuclear and Radiation Safety Department
PICASSO	A system for radiological monitoring
PNE	Peaceful nuclear explosion
PO	An industrial association
POIO	Public Outreach and Information Office
PU	Plutonium
PWR	Pressurized Water Reactor
RAEPK	Roadmap for Developing the Nuclear Energy Industry
RAN	Russian Academy of Science
RAO UES	Unified Energy System of Russia; a Russian electricity trading and holding company
RBMK	High Power Channel Type Reactor

RBP	Russian Biofuel Program
RF	Russian Federation
REA	Russian Environmental Academy
RES	Renewable Energy Source
RFYaTs	Russian Federal Nuclear Center
RITEG	Radioisotope Thermoelectric Generator
RNTs	A Russian science center
ROI	Return on Investment
RosAtom	Rosatom Nuclear Energy State Corporation
RosGidromet	Russian Federal Service for Hydrometeorology and Environmental Monitoring
RosProm	Federal Agency on Industry
RosEnergoAtom	Russian nuclear power stations operator under the Atomenergoprom.
RosPotrebNadzor	Federal Service for Oversight of Consumer Protection Rights and Welfare
RosStroi	Federal Agency of Construction, Housing and Housing Services of the Russian Federation (aka. GosStroy)
RosSudoStroyeniye	Russian Shipbuilding Agency
RosTekhNadzor	Russian Federal Service for Ecological, Technical and Atomic Supervision
RS	Radioactive Substances
RSFR	Russian Soviet Federated Republic
RTG	Radioisotope Thermoelectric Generator
RUB	Ruble (Russian currency)
RUSAL	Russian Aluminum Company
RW, radwaste	Radioactive Waste
SCEAR	Scientific Committee on the Effects of Atomic Radiation
SCWR	Super Critical Water Reactor

SevMorGeo	Federal State Unitarian Research and Production Company for Geological Sea Survey
SFD	Southern Federal District
SFR	Sodium-Cooled Fast Reactor
SIEP	Severnoye Izmereniye Environmental Partnership
SNF	Spent Nuclear Fuel
SMP	Strategic Master Plan
SKhK	Northern (Siberian or Seversk) Chemical Combine
SPORO	Health standards and regulations for radioactive waste management
Sr	Strontium
SRMS	Ship Radiation Monitoring System
SRW	Solid Radioactive Waste
TEK	Heat and Energy Complex
TNT	Trinitrotoluene
TPP	Tidal Power Plant
TPU	Tomsk Polytechnic University
TsPB	Business Support Center
TW	Terawatt
U	Uranium
UN	United Nations
UNEP	United Nations Environment Program
US	United States of America
USD	United States dollars
USSR	Union of Soviet Socialist Republics
VA	Volumetric Activity
VHTR	Very Hot Temperature Reactor

VNIIEF	All-Russian Scientific Research Institute of Technical Physics, a federal nuclear center in the city of Snezhinsk (Chelyabinsk-70)
VNIITF	All-Russian Scientific Research Center for Experimental Physics
VNIPI-PromTechnology	Institute that researches and develops uranium mining and processing technology
VOOP	National Russian Nature Conservation Society
WHO	World Health Organization
WMD	Weapons of Mass Destruction

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