



**Current Project Report:**  
**Remediating Legacy Lead Pollution in  
 Rudnaya Pristan and Dalnegorsk**



**Project Details:**

Location	Rudnaya Pristan, Dalnegorsk, Russia
Contaminant	Lead in the Environment
Project Duration	2007—present
Project Cost	\$500,000
Implementing Partners	Far Eastern Environmental Health Fund, Green Cross, Far Eastern National University, University of Idaho, Terragraphics

**Performance Metrics:**

Toxin	Lead
Affected Population	35,000
Exposure Standards	Soil—400 ppm Water—15 ppb Blood—10 µg/dl
Levels Prior to Project	Average well over 15µg/dl
Levels Following Completion	Average below 12µg/dl and falling

○ **Background and Scope:**

The Rudnaya River valley has experienced alarmingly high rates of cancer and other acute, chronic conditions as a result of several different types of industrial pollution. Outdated mining techniques have resulted in cadmium, zinc, lead, boron and sulfur contaminating the entire city of Dalnegorsk, affecting the air, soil, water, homes, and crops. Neighboring Dalnegorsk is the second largest city in the region, Rudnaya Pristan, which is built around a lead smelting facility and a seaport, and is also among the most lead contaminated sites in Russia. Rudnaya Pristan has an extraordinarily high rate of people with acute respiratory disease and neurological damage, and the contamination has worsened since the beginning of third party involvement.

Zinc and lead ore used to be mined in Dalnegorsk and transported in open cars to Rudnaya Pristan for smelting, a practice that ended only four years ago. The area between the two towns, as well as the towns themselves, have been subject to being literally dusted with lead and cadmium, two of the most potent naturally occurring neurotoxins, for nearly 100 years. The heavy metal pollution has contaminated almost every facet of the Rudnaya River Valley. Approximately 50% of children randomly tested in this region presented abnormally high blood lead levels, despite the discontinuation of lead smelting in the area.

Age	Mean Blood Lead Level*	Percentage over 10 µg/dl
Under 2 years of age	22.55±2.12 µg/dl	100%
3-6 years of age	25.00±3.95 µg/dl	88.9%
7-12 years of age	17.16±2.7 µg/dl	85.7%
Over 12 years of age	9.53±3.16 µg/dl	0%

\*Data taken prior to cleanup and containment efforts

○ **Solution Implemented:**

The success of this project hinges on a collective effort to assess the sources of continuing contamination and outreach and educational efforts on the hazards of lead poisoning and heavy metal pollution. The success of this program has been evaluated in terms of continued elevation of children’s blood lead levels, with an eye toward lowering the average level of exposure as far as possible.

Efforts to curb continued lead poisoning involved the identification and cleanup of the most heavily frequented children’s play areas. The lead and cadmium-contaminated areas were mapped along the entire valley, allowing the local partners, with Blacksmith, to make targeted and pertinent recommendations to the

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residents of the Rudnaya Valley, as well as make more concerted efforts toward remediation.

Following the successful identification of the major problem areas, the local partners were able to remove between 20-30 hundred cubic meters of contaminated soil from six heavily trafficked kindergartens (3 sites in Dalnegorsk , 2 in Rudnaya Pristan, and 1 site in Serzhantovo) and one summer camp, Camp Chaika, and dispose of it safely.



Following the physical removal of the contaminants from children’s spaces, the next step was careful medical assessment and monitoring. Blood lead tests were administered throughout the area to quantify the extent of the contamination, as well as providing a means for identifying the most significantly affected areas. 120 families with children that presented the most severely elevated blood lead levels were presented with literature on how to reduce the negative impact of heavy metal exposure. They were also provided with food additives to facilitate the removal of heavy metals from their systems.



While the most aggressive and hands-on care was given only to the most significantly affected children and their families, over 5,000 families were given pamphlets educating parents on how to limit exposure to lead and other heavy

metals. Information on the hazards of heavy metal poisoning was also disseminated through mass media outlets, as well as in popular children's books.

- **Project Performance:**

The results of these efforts have been very promising. Prior to the 2007 heavy metal awareness campaign and reduction of environmental pollutants, 22% of the children of Dalnegorsk and 65% of the children in Rudnaya Pristan presented blood lead levels greater than the acceptable WHO standard (over 10ug/dl). Of those same children, about 2% in Dalnegorsk and 24% in Rudnaya Pristan had very high blood lead levels (over 20ug/dl) Just two years later in 2009, the number of children with lead levels over 10ug/dl dropped to 9% in Dalnegorsk, and the number with high lead levels (over 20ug/dl) dropped to less than 1%. In Rudnaya Pristan, results were not quite as dramatic, likely due to the greater severity of the problem of lead contamination in that area. In Rudnaya Pristan, while the overall number of children exhibiting lead levels above 10ug/dl only dropped to 64%, the number with high levels (over 20ug/dl) did drop considerably to 14%. Those children who decreased their blood lead levels did so on an average of nearly 50%.

As promising as these results have been in Dalnegorsk, Rudnaya Pristan still remains largely affected. Currently, upwards of 50% of their children still have a blood lead level of over 10 µg/dl, and further remediation is urgently needed in Rudnaya Pristan.