

From: VF Belogolovov

TO: US-Russia Health Risk Research Dialogue Participants

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Subject: Memo 2 - Implemented and Proposed Projects at Zakamensk

The implemented and proposed projects aimed at finding a solution to health problems caused by the accumulated environmental damage that resulted from the wastes of Dzhidinskii Tungsten-Molybdenum Mill (DTMM) at Zakamensk

The implemented	The proposed	Comments
<p>1. Regulatory provision/maintenance 1.1 Examination/Expertise of the damages size/scope (Ukraine) 1.2</p>	<p>1. Examination of all kinds of damages to which the population was exposed 2. An estimation of suitability for living in the apartments/area located in the environmental disaster zone/territory 3. Removing a restriction on the budgetary funds aimed at rehabilitation/remediation from the accumulated environmental damage on the lands and objects of municipal self-government and private owners</p>	<p>After a positive court decision  Lawyers' consultation is needed  There is a proposal to the Federal Law about accumulated environmental damage mitigation/liquidation (including a possibility of apartments' de-privatization)</p>
<p>2. Risk evaluation to nature and the population 2.1 Detailed description of the environmental disaster area in Zakamensk with regard to depositing compounds (scum, dust, etc.) 2.2 Estimation of risks from vegetation transpiration in the environmental disaster area in Zakamensk (S.Karolina)</p>	<p>1. To continue BROB project (2014) on typifying all houses in Zakamensk on their suitability for living 2. Biogeochemical survey of new plantings/vegetation on reclaimed old tailings  3. An estimation of cancer risks (pre-cancer and cancer) 4. An estimation of risks from wild crops in the impacted area of the DTMM 5. An estimation of risks from organic toxicants in the DTMM's wastes – floatation reagents  6. Certification of DTMM's wastes</p>	<p>The simplest, fast and inexpensive method.  Base data can be found in the works of the Geological Institute, the Siberian Branch of the Russian Academy of Science (A. Kovalevsky) P. Shablin's methodology can be assured by cancer markers. First of all wild crops - concentrators (mushrooms)  The gas and liquid chromatography can be conducted at Buryat Research Center and Limnological Institute (Irkustk Research Center, the Siberian Branch of the Russian Academy of Science) On toxicity and sanitary-hygienic</p>

	(including tailings of Zun - Naryn)  7. Creation of a network of automatic meteorological stations in Zakamensk 8. Creation of a network of dust collecting checkpoints for monitoring	dangers  It is possible to combine it with school educational projects  Costs for heavy metal analysis per year are about 15,000 Rub.
3. An estimation of health deterioration caused by the accumulated environmental damage. 3.1 Radiation-dendrochronological exposure assessment/estimation (by Shirapova)  3.2 Impact assessment of heavy metals transportation/transfer to the River Dzhida bottom land in the flood season	1. the same assessment on radionuclides/radioactive species and heavy metals can be conducted at Zakamensk  2. Risk assessment of transported/carried heavy metals and their introduction into the food chains at farmlands in exposed areas of the River Dzhida bottom land	The data can be used in evolutionary models for retrospective analysis of DTMM's wastes' impact in the past period.  In villages located in the impacted area at the river Dzhida bottom land it is not possible to conduct background sampling of the population by the means of biomarkers.
4. Population and nature rehabilitation/remediation 4.1 Phytoextraction of heavy metals (Buryat Research Center)	1. An estimation of a barrier capacity of locally harvested crops and exposure transfer of heavy metals from leaves to fruits	Some regional data are available in A. Kovalevsky's works (Geological Institute, Buryat Research Center, the Siberian Branch of the Russian Academy of Science)
5. Judiciary/Court practice of compensation for damages 5.1 Federal Budget Institution of Science	Zhanna Flat's trial claim (?)	Lawyer's consultation (if such a lawyer can be found)