

TO: Sergei Shapkaev

FROM: Paul Robinson

DARE: November 8, 2014

SUBJECT: Notes from Webinar 3 Discussion

A Webinar will be convened November 10 6:45 PM New Mexico Time/9:45 PM Ulan-Ude Time. The Webinar will be convened as skype call. Time connect to the call can be saved by identifying the skype address they will be using so the convener can call the participants to initiate the call

Comments:

Webinar participants request copies of all references from "Data Inventory Table" on October 31. We would like to request copies of Russian version as soon as possible and arrange translation of key parts among team.

Gary Cook works with Russian speaking interns who can again supplement the translation capacity in the US and Russian parts of the project once documents are provided.

Participants Request a written summary of Lubov Makarova's presentations including supporting data referred to during the discussion.

Participants would like to know which of the Russian participants in the US Field Trip will be familiar with the natural resource and bio-samples mentioned in the Presentations; the data available to supplement the existing database and plans if any to supplement the existing database.

Participants request copies of tables, slides or reports identifying both:

- 1) the applicable standards - maximum permissible concentrations, "PDKs," etc. - for soil, water, air quality and ingested food; and
- 2) the identified concentrations of heavy metals in water, soil, air and plants referred to

in Makarova's discussion during Webinar.

Elena O'Donald has copied the Russian version of "Assessment of the environmental condition of the territory of Zakamensk to determine the zone of ecological trouble, 2000" and convert to machine translated English as first step for US colleagues to understanding its contents.

Comments included:

- For effective research, data must be sufficient to provide for evaluation of health outcomes. Concept of comparison of health outcomes in past and present population depends on the availability or attainability of sufficient data to conduct the evaluation.

- What other populations can be used in for comparison – Assessment of the environmental condition, 2000” mentioned comparison to Kyakhta Rayon a region of Buryatia isolated from Zakemensk or other metal mining complexes. Do the population of that region provide an appropriate comparison to the population in Zakamensk region?

- How can we help people think through the opportunities to evaluate the data if we don’t have it available?

Regarding suggestion of analysis of current and previous populations in Zakamensk, comments include:

- What data exists from workers at the complex pre-closure?

These populations could be understood as:

Mining and Milling Era: 1930s – 1990 (A) Adult (C) Children

Post Mining and milling Era: 2000 - present (A) Adult (C) Children

Existing data could be used to identify whether sufficient data on health outcomes is available:

Population	Sub-Population	Yes Health Outcome	No Health Outcome
Worker Families (W)	Adult (A)		
	Children (C)		
Non- Worker Families (NW)	Adult (A)		
	Children (C)		

	WA	WC	NWA	NWC
Expected				
Non-Expected				

This initial data assessment would help identify whether there are available data, or attainable data, sufficient to support statistical analysis to differentiate among populations and health outcomes? Differentiate among Worker and Non-Worker Populations?

- Exposure is function of amount and mixture of heavy metal ingested or inhaled. Identification and evaluation of actual exposure in populations is determined by quantifying exposure – amount ingested. Exposure is not addressed by supposition that the “lack of exceedences” of standards in water, air, soil and ingested food results in lack of health consequences.

- Thinking about what you want to discover?

recommend focus identification of differences among rates of standard clinical measures rather than rare disease appropriate for metal exposures identified. Example: standard common clinical measures include cardiovascular and immune markers as opposed to relatively rare diseases such as cancers.

- Research can be designed to find the intersections between these things.

- Research methods in DiNEH project provided methods to correlate inflammatory effects vs. proximity.

- proximity to waste sites, NOT use of water exceeding standards is the attribute correlated with increased health effects.

- A research hypothesis addressing the population exposure comparison might be: Hypothesis (Ha):

Variant 1) People who moved in after active operations are less sick than those that lived there during operations?

Variant 2) People who lived in Zakamensk during active operations are sicker than those that moved in after operations ceased?

Null hypothesis: There is no difference in health status among the groups?

The hypothesis could be tested using existing datasets for these populations identify whether sufficient differences among health outcomes and expected vs. non-expected rates for those outcomes evaluated.

DiNEH evaluation includes correlations among datasets:

E1 – Proximity to mines and mine waste – geospatial data

E2 – Activities on wastes – (mining vs non-mining).

E3 – consumption of AS and U in unregulated sources

E4 – Levels of oxLDL in blood and uranium from biological sampling (cardiovascular markers)

E5 – Levels of immune markers from biological sampling in blood

Elena O'Donald offered the following suggestion:

It would be nice if the Russian team could bring with them a detailed plan (from A to Z) of what's need to be done, what's being done, what's planned to be done, and what's not expected to be done. The detailed plan would include all steps of proofing the health harm of exposure to heavy metals in Zakamensk. My summary document about Zakamensk could be used as a starting point and its format could be kept to add more details to the document. It would be helpful to add there all information from other multiple documents that apply. For each step, each paragraph, and each statement it would be good to consistently list several points in a unified format (for easier reading), including the following:

- the summary of research,
- the summary of findings,
- the time points [of conducted or planned research],
- the levels [of concentration of each element in what media (soil, water, air, blood, urine, etc.)],
- the levels/rates/ratios [of health disorders, or diagnosis, per each group of the sample],
- the number [of observations in the sample and each group of the overall sample],
- the description [of population and each group of the sample, such as age, residency, etc.],
- the limitations of research,
- the methods of analyzing the data for this specific research,
- the organization(s) who owns the data,
- the names of people who make decisions on the use of this data,
- the names of people who have access to and work with this data, and
- the references to the corresponding document(s) that support this statement and it's elements (pointing to the specific page, figure, or table).

In case if the research is not planned, the reason(s) of why it won't be or cannot be done also should be listed.

Documents that support each statement should be included. These documents would be complete and accurate. We need both originals in Russian (of each document) and translations into English if available. It would be nice to follow the same file naming convention, for example:

A brief name in English - Ru, 2014-10-30

A brief name in English - En, 2014-10-31

In addition to this detailed plan, it would be nice if our Russian colleagues would bring the data itself (along with the codebooks and descriptions). The Russian team members do not have to necessarily share this data with us. If they could use their own computers to show data to our researchers, scientists, and/or statisticians, and discuss it, this might be beneficial to their own research and to our collaboration project overall.

Also it may be helpful to create another detailed document that can be called, for example, "A Heavy Metal Pathway Guide". This document could look like a table with the following columns:

- The Element (heavy metal)
- Maximum permissible concentrations in each media (soil, blood,..)
- Human health side risks/effects that are associated with what levels of exposure
- What tests, exams, and lab work needs to be done to trace these metals in the body
- What are the time points on when these tests should be done
- Any other specific requirements should be listed when appropriate

Each statement would include references to the page, figure, or table of the supportive document/article.

These supportive documents/articles should also be included (in the original language and also as an English translation if available).

The second slide of Lubov Makarova's presentation during the 1-st webinar could be a starting point for "A Heavy Metal Pathway Guide" development. Lubov Makarova's table give us a good generalized view on the health risks that are associated with the heavy metal exposure. And now we may want to expand this by adding more details, listing other pathway sections, and providing references to the published articles.