Environmental risk to health from gold mining activities and strengthening chemical safety in Mongolia

26 February - 15 March 2008

Draft mission debriefing

Background
A chemical incident, involving the release into the environment of large quantities of mercury and cyanide, occurred in Khongor Soum, Mongolia, in April 2007. This incident has raised serious concern among the local population regarding the potential health effects which might result from this environmental contamination. Initial investigations conducted by the World Health Organization, joint UNEP/OCHA environment unit, and the Mongolian authorities highlighted the need to conduct a health risk assessment for the population at risk.

Upon request of the Mongolian Government, a Joint UN mission consisting of international experts from the World Health Organization (WHO), the United Nations Environmental Programme (UNEP) and the Food and Agriculture Organization (FAO) took place from 26 February to 15 March to assess the situation with regards to human health, food and animal health, and the environment with particular focus on mercury and cyanide. This preliminary report presents the preliminary findings and recommendations of the activities undertaken by WHO.

WHO activities
As part of its health investigation WHO conducted the following investigations from 3-8 March 2008 in Khongor and Khushaat Soums (Khushaat served as reference):

i) WHO analysed 150 urine samples for mercury;

ii) WHO oversaw the collection of 150 blood samples to be analysed for mercury and other substances, if necessary, in the UK;

iii) WHO conducted extensive neurological tests on all participants (with up to 30 different tests per person), taking into account the potential effects of both acute cyanide poisoning and mercury exposure;

iv) WHO oversaw dermatological examinations and 152 skin allergy tests for mercury; and

v) WHO conducted extensive interviews asking up to 150 questions concerning occupational history, residential situation, health situation, and others.

Upon request of the Prime Minister, WHO also analysed 98 urine samples and collected additional information from people in Bornuuar Soum and Tal Bulag Bag in Jargalant Soum.
The investigations have been used as an opportunity to train national staff to conduct similar environmental investigations in other Soums in the future. Community representatives joined the investigation team as observers and preliminary findings were discussed with community representatives on 8 March.

**WHO preliminary findings**

Preliminary findings were presented and discussed at a full day debriefing session at the Parliament House on 10 March involving parliamentarians, ministers, representatives of national agencies, NGOs, provincial government officials, community representatives, and others.

Out of 109 urine samples measured in Khongor Soum, 105 were below the detection limit for mercury. The remaining 4 showed measurable concentrations of mercury that were far below levels representing a health concern (7 µg/L, as defined by the German Human Biomonitoring Commission). Out of 43 urine samples measured in the reference Soum, Khuushat Soum, 41 were below the detection limit. The remaining 2 showed measurable concentrations of mercury that were far below levels representing a health concern (7 µg/L, as defined by the German Human Biomonitoring Commission). The results measured by WHO using mobile analytical equipment (Lumex) have been confirmed by the Japanese National Institute for Minamata disease, which also collected urine samples from 19 - 26 February 2008.

Neurological tests performed in both Khongor Soum and the reference Soum (Khuushat Soum) did not reveal any neurological health effects which could be attributed to mercury exposure or acute cyanide poisoning.

The prevalence of skin diseases was much higher in Khongor Soum compared to Khushaat Soum. However, these skin diseases are unlikely to be attributed to mercury exposure because they did not correspond to typical skin symptoms expected for mercury intoxication. Furthermore, skin patch tests conducted on 109 participants show that the dermatological effects observed are unlikely to be due to contact with mercury. 2 out of 109 patch tests were positive in Khongor Soum compared to 1 out of 43 observed in Khuushat Soum (reference Soum). The high prevalence of dermatological problems observed in Khongor Soum was found to have different causes, including contagious and non contagious origin. Contagious dermatological diseases observed included bacterial, fungal and parasitic skin diseases.

In contrast to Khongor Soum and Khuushat Soum, urine samples collected in Bornuuar Soum and Tal Bulag Bag in Jargalant Soum (both typical gold mining areas) showed high levels of mercury. This was the case for both women randomly selected and people involved in mining activities.

**WHO preliminary conclusions and recommendations**

Urine tests, skin tests, and medical investigations conducted by WHO in Khongor Soum indicate that the population is very unlikely to have been recently exposed to mercury and cyanide.

1. Neurological and medical examinations conducted by WHO did not suggest any health effects which could be attributed to mercury exposure or acute cyanide poisoning.
2. Although tests conducted did not indicate signs of recent exposure to mercury or cyanide, it is strongly recommended to establish systems to effectively monitor for mercury, cyanide and other pollutants to avoid future exposure and health risk.

3. Furthermore, it is recommended to follow a community approach to address the high prevalence of skin diseases observed in Khongor Soum following internationally accepted guidelines.

4. Health concerns among the population for themselves, their families and their communities are understandable. Following an event such as that which occurred last April, anxiety as to possible long term health effects can be high. It will be important that the authorities provide detailed information as to the current situation and ensure an ongoing dialogue with the public as to any health risk.

5. Tests conducted by WHO of samples from people living in Bornuur Soum and Tal Bulag Bag in Jargalan Soum has indicated that the local population has been recently exposed to mercury. It is strongly recommended to take necessary action to address this important health issue in both Bornuur Soum and Tal Bulag Bag in Jargalan Soum. Furthermore, it is also recommended to further investigate and mitigate the health risks in small scale gold mining communities throughout the whole country.

6. During the coming days and weeks, blood and hair samples will be further analysed for mercury and other toxic substances if required. All data will be statistically analysed in detail. The final report will be then delivered to the Ministry of Foreign Affairs and other Ministries. All samples have been preserved and stored for re-analyses, if necessary.

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**WHO capacity assessment and capacity building activities**

From 3 March to 13 March, WHO assessed the national capacities for the sound management of chemicals. WHO also conducted a 3.5 day chemicals safety training workshop involving up to 80 national experts.

As part of the capacity assessment, detailed questionnaires were distributed to over 50 relevant institutions from the government, private and public sector. Furthermore, detailed interviews were conducted with representatives of 35 of these institutions.

Based on information collected during the capacity assessment, the international expert team identified gaps and needs, and developed recommendations to strengthen the national capacities for the sound management of chemicals. These recommendations were reviewed with national experts and initial steps were taken to develop an action plan to improve the sound management of chemicals in Mongolia.