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April 25, 2003

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Sent by email to:
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Comments on Nanisivik Reports: Human Health and Ecological Risk Assessment, Environmental Site Assessment, and Emergency Response Plan.

On behalf of Indian and Northern Affairs Canada (INAC), I am pleased to provide the following comments to the Nunavut Water Board (NWB) regarding the reports submitted by CanZinco Ltd. relating to the final closure and reclamation of the site. The three reports in question are the Human Health and Ecological Risk Assessment (HHERA) report, the Phase II Environmental Site Assessment (ESA) report, and the Emergency Response Plan (ERP).

Preliminary comments regarding these reports were provided to the NWB and CanZinco during a technical meeting in Iqaluit on March 29, 2003 and are summarized in the NWB letter of April 11, 2003. Although the more major issues brought up in that meeting will be repeated in this letter, a lack of repeating some of the comments that were either raised at that meeting or mentioned in the various consultant review reports provided at the meeting (i.e. reports by EBA/BC Research, Acres, and Dillon) should not be considered by CanZinco as though those issues are resolved. INAC therefore expects that any response from CanZinco should also deal with the comments brought up during the technical meeting.

Human Health and Ecological Risk Assessment

1985 Background Values

With regards to the HHERA report, the most significant concern relates to the use of the 1985 geochemical sampling results obtained for mineral exploration as background data. The HHERA report appears to use these 1985 values as part of the calculation in determining the Site Specific Threshold Limits with respect to human health ($SSTL_{HH}$), as indicated in section 6.5.1.1 of that report (p. 37). Since the SQROs are determined by using the lowest of the SSTLs (i.e. the lowest SSTL value between the human health SSTL and the ecological SSTL), the background values used will therefore have an impact on the SQROs. This is

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apparently contrary to the statement at the technical meeting that background levels do not affect the calculated SQROs.

Assuming the background levels do affect the SQROs, INAC is not convinced that the 1985 results represent adequate background baseline data. Although it is admitted that the tailings were still deposited below water at that point in time, the results still indicate higher values at the town site and docks than in the surrounding area. From that observation alone, it is hard to conclude that mining and related activities have not had an influence on the 1985 values in those areas. Yet, it is specifically those 1985 townsite and dock area values which are higher than the surrounding 1985 values that are being used to determine the SSTL and SQROs for the townsite and dock, respectively. On this basis, the selection of a background directly affects the soil contamination level assumed to be safe. An inappropriately high background will lead to unacceptable levels of residual contamination after remediation is completed.

Therefore, INAC believes that it may be more appropriate to use an overall average background level of the entire area with the 1985 results rather than site specific (i.e. townsite, dock area) background levels. Using lead as an example, the difference in background would be 204.2 mg/kg over the townsite area compared to only 67.9 mg/kg if using the entire mine site (as indicated in the EBA report provided at the technical meeting). It is much more likely that the latter value is a much more appropriate background value than the value that is currently being used.

Another problem with the 1985 data is that there is no mention of the methodology of sampling, analysis methods, or even quality assurances and quality control methods (QA/QC). It is therefore hard to evaluate the accuracy or validity of the 1985 values. Therefore, even if using the average 1985 value of the entire area, as suggested just above, there is still no guarantee that the value represents an adequate background level.

INAC therefore requires CanZinco to, at the very least, justify the use of the 1985 data as appropriate background levels. One possible way of justifying the results would be to sample areas that have not been affected by the mining activities throughout the years. This would obviously include areas that have not been affected by windblown tailings. If these areas give results that are similar to the 1985 values, then this could serve to help justify the 1985 results as adequate pre-mine background levels. INAC would be pleased to discuss with CanZinco possible areas for sampling which may prove useful for the verification of background levels.

Lead as a Carcinogen

This issue was brought up at the technical meeting, and INAC believes that it should be adequately covered by the proponent, particularly if there plans to be alternate human use of the site.

The current SQRO for lead proposed by CanZinco for the townsite is 990 mg/kg. If the background level is adjusted to the entire area as suggested above, the effect for lead would be to lower the SQRO to roughly 850 mg/kg (again, using the equation in section 6.5.1.1 of the report). If you then add in the possible effects of lead causing cancer, the effects on the SQROs for lead can therefore be significant in the final result.

INAC therefore recommends that the $SSTL_{HH}$ for lead be recalculated including the possible carcinogenic effects of lead.

Difference between Polaris SQROs

TeckCominco, the owners and operators of Polaris Mine, is also in the process of closing down their mine. In the case of Polaris Mine, there is no intended future use of the site, and the SQROs were calculated assuming only the occasional visitor. This drastically differs from Nanisivik Mine, in which there is intended future use and the possibility of permanent residents on-site. There is therefore much less human health risk associated with Polaris Mine than there is with Nanisivik Mine. Yet, despite this, Polaris Mine has derived much more stringent SQROs than those presented in CanZinco's HHERA.

INAC would therefore appreciate if CanZinco can justify to difference between the values obtained from the two mine sites.

Approval of SQROs

Finally, because determining the Soil Quality Remedial Objectives (SQROs) for Nanisivik Mine is one of the most critical aspects of the approval of the final Closure and Reclamation Plan, INAC strongly recommends that regulators be provided the opportunity to comment on any response provided by CanZinco relating to the HHERA and SQROs. INAC also recommends that the NWB and other regulators with respect to the approval of the Closure and Reclamation Plan - notably the Government of Nunavut (GN), INAC, and the Department of Fisheries and Oceans (DFO) - have an additional technical meeting solely to discuss the SQROs for the purpose of having a joint approval of SQRO values that all regulators are satisfied with.

The NWB has indicated in their April 11, 2003 letter that a teleconference between the regulators will take place on May 23, 2003 to discuss final approval of these reports. INAC therefore agrees with this teleconference technical meeting. Our only concern is that since CanZinco's reply to our comments is scheduled for May 19, 2003, there may not be sufficient time to adequately review CanZinco's response or request additional comments from CanZinco. INAC therefore would like to state that there may be additional technical meetings required after the one on May 23, 2003. Obviously such matters can be discussed in more details during that teleconference once the appropriate information is in hand.

Phase II Environmental Site Assessment

Methodology

With respect to the ESA, many of our comments can be summed up by the requirement of a more detailed methodology section.

For one, specifics as to the analytical methods used would be appreciated. This should include the differences between the on-site laboratory and the external laboratory in terms of methods, precision, accuracy, and results. Also, what were the QA/QC methods used by both laboratories? Since there may be a difference between the laboratories, indicating which samples were analyzed by which laboratory would also be important to note in the results.

Another aspect of the methodology that requires further clarification is the reasoning why certain locations were sampled and not others. Likewise, why were certain samples analyzed and not others? Although it is understood that the specialists on site can make decisions based on their experience and knowledge as to what should be sampled and/or analyzed and what doesn't need to be sampled and/or analyzed, their methods of decision or criteria examined should be clearly explained in the methodology section. Similarly, including a table of all the unanalyzed samples that indicates specifically what criteria each sample failed (or passed) which removed the need for analysis would be useful.

Risk Involved with Un-sampled Areas/Unanalyzed Samples

In the results section, it mentions that test pit TP02-91 had elevated zinc levels despite the lack of visible or olfactory indications. It the visible and olfactory signs were the criteria used to determine what samples should be analyzed or not, what implications does that have with the overall results? That is, is it possible that many of the samples that were not analyzed (or areas that were not sampled) have unexpectedly high concentrations? What are the risks involved with the assumptions and criteria that were used?

Likewise, certain areas, notably south of the West Twin Disposal Area and near Kuhulu lake were not sampled because it is outside of the normal wind pattern for the area and thus not likely to have been disturbed by wind-blown tailings. Is it not possible for those areas to have received some wind-blown tailings or even other forms of contamination throughout the entire lifespan of Nanisivik mine? INAC would be more comfortable with the assumption that those areas - and other similar areas - have not been impacted if at least a few samples were taken from those areas for the purpose of confirmation.

Unsampled Parameters

There appears to be no sampling related to PCBs. Although it is acknowledged that most sources of PCBs have been removed from the site, collecting a sample at their former sites of storage or use should not be much of a problem.

Likewise, chlorinated ethenes were mentioned as contaminants of concern, yet there is no indication of sampling or analysis for them in the results or methodology.

Finally, there does not appear to be any sampling for ammonium nitrate in the area around the ANFO plant.

1985 Background Values

For the same reasons as mentioned in the HHERA report comments above, INAC requires more justification that the 1985 geochemical survey results represent true background levels of the site.

Delineation and completion of the Phase II.

Although INAC can accept this report once the above issues have been dealt with, INAC does not consider this report to be the end of the Phase II Environmental Site Assessment. Ultimately, INAC is expecting a complete delineation of the contaminants as the final stage of the phase II site assessment proceedure. However, we acknowledge that there is no point in delineating until the SQROs are finally approved. This ESA report provides a good starting point for that final delineation.

Emergency Response Plan

With regards to the ERP, INAC has no significant concerns beyond the issues already raised during the technical meeting.

If you have any concerns or questions regarding our comments on the above reports, please feel free to contact me.

Sincerely,

Original Signed By: Michael Roy

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