

DEC's comments/recommendations on: Alaska Community Action on Toxics (ACAT) Comments (dated 11 July 2005) on the DMTS Fugitive Dust Risk Assessment Prepared by Exponent for Teck Cominco Alaska Incorporated (dated April 2005).

No.	Comment	Priority	Recommendation
ACAT-1:	<ul style="list-style-type: none"> Important contaminants are not addressed None of the elements tested as CoPCs were speciated (e.g. chromium or mercury). Elemental forms and speciations should be examined as separate analytes (for example in Table 3-3). It is especially important to assess the most toxic forms of compounds for presence and effects. For example, this risk assessment does not speciate mercury, nor does it present testing methods and results for inorganic and methyl mercury. As discussed in Peplow (2005), mercury is extremely toxic and is ubiquitous in the environment. It is imperative that this risk assessment examine the environmental and human health effects of mercury in all of its forms. 	Medium	Please respond to the issue of the metal speciation. Please ensure that the revised ERA clearly indicates that mercury was conservatively evaluated as methylmercury and that chromium was conservatively evaluated as hexavalent chromium so that ecological risks from these metals would not be underestimated.
ACAT-2:	<ul style="list-style-type: none"> Metals are bioavailable in the environment, and thus their risk is underestimated The risk assessment does not refer to or acknowledge recent scientific advancements in understanding metal bioavailability. Dr. Peplow discusses several natural biological and chemical processes that result in metals being more bioavailable in the environment than the risk assessment discloses. ACAT (May 2004) also presents a lot of information on bioavailability of lead that has not been acknowledged, discussed, nor incorporated into risk characterizations by Exponent. Standard methods to predict mineral speciation, the solubility of oxidized metals, and solubility products using Eh-pH stability diagrams were not used. Similarly, sequential extraction techniques to characterize the relative concentrations of the different forms of the metal compounds and the potential bioavailability were not used. 	Medium	Please respond to the concern that there is continued research on metal bioavailability. Please acknowledge that the risk assessment used both a site-specific bioavailability and the EPA default bioavailability.
ACAT-3:	<ul style="list-style-type: none"> The effects of metal mixtures on toxicity and bioavailability were not considered All sampling sites (terrestrial and aquatic) showed the presence of several heavy metals in combination. Scientific literature has documented that the toxicity of heavy metals interact in a number of ways. Metal mixtures can affect bioavailability and bioaccumulation. Youn-Joo et. al. (2004) found that “Binary metal combinations of copper and cadmium, copper and lead, and cadmium and lead produced three types of interactions: concentration additive, synergistic, and antagonistic. ...bioaccumulation of one metal was influenced by the presence of other metals in metal mixtures.” 	Medium	Please address the issue in the uncertainty section that there is not quantitative data to evaluate the additive, synergistic, and antagonistic effects of multiple chemicals and that exposure to multiple chemicals was assumed to be additive, consistent with DEC and EPA guidance.

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	<p>These complex interactions increase the risk of toxicity to receptor species and organs. Although these interactions have not been quantified and captured in water and sediment quality criteria, their contribution to the overall environmental and human health toxicity must be acknowledged in the risk evaluation.</p>		
ACAT-4:	<ul style="list-style-type: none"> • Reference areas are not appropriately chosen Sites should be located farther away from the DMTS, in a geographically separate area. There is discussion of the separation provided by a mountain range south of the haul road in the 2004 NPS survey. Further, the location of reference sites should not be based on their situation on the “prevailing upwind” side of the road. Winds don’t always blow from the south, especially in the summer (TCAK 2005, figures 8 and 9) when fugitive dust is not captured within the snowpack, and so is at its most mobile. Also, trends in wind direction vary greatly from year to year (personal communication Colleen Swann to Amy Crook, June 14, 2005). Thus these “upwind” sites aren’t references, but could and should be subjects of another study, a comparison between north and south transects along the haul road. 	High	Please respond to the adequacy of their proposed reference sites.

Key:

- ACAT = Alaska Community Action on Toxins
- DEC = Department of Environmental Conservation (Alaska)
- DMTS = DeLong Mountain regional Transportation System
- NA = Not Applicable
- TC = Teck Cominco

Notes:

1. Comments submitted by Pamela Miller, Executive Director, ACAT, 505 West Northern Lights, Suite 205 Anchorage, Alaska 99503. ACAT comments were prepared by Erin Steinkruger.
2. See the original ACAT comment letter for complete citations of cited literature.