EARTHWORKS

October 10, 2011

Lisa Jackson
EPA Administrator
Ariel Ross Building
1200 Pennsylvania Ave. NW
Washington DC 20460

Re: Expansion of TRI requirements to include phosphate mines.

Dear Administrator Jackson,

On behalf of Earthworks, we urge the EPA to initiate a rule-making to expand the list of sectors subject to the requirements of the TRI program to include phosphate mining. Earthworks is a nonprofit organization dedicated to protecting communities and the environment against the adverse impacts of mineral development. Earthworks has 40,000 members nation-wide, and we have offices in Washington DC, Montana, Colorado, Texas, New York, and California.

Phosphate mining releases significant amounts of selenium into the environment. These releases have adversely affected water quality, fish, wildlife and livestock, and it poses a threat to public health.

It is vital that the public have access to information about the amount of selenium released into the environment in and around their communities via the Emergency Planning and Community Right to Know Act (EPCRA). This type of information allows community members to understand the risks associated with releases of hazardous pollutants, and to make more informed decisions.

Sincerely,

Bonnie Gestring
Earthworks
140 South 4th Ave. West
Missoula, MT 59801
406-549-7361
bgestring@earthworksaction.org

Selenium Impacts to Water Quality, Aquatic Life, Wildlife, Livestock and Public Health

A. Impacts to Aquatic Ecosystems

Phosphate mining is a significant source of selenium to the environment. For example, phosphate mining in southeast Idaho has resulted in extensive water quality impacts, resulting in over 160 miles of streams that cannot meet their beneficial uses due to elevated levels of selenium.[1]

The 2008 Idaho 303d report lists the number of impaired streams due to elevated selenium in southeast Idaho, which include: Sage Creek, Pole Canyon Creek, South Fork Sage Creek, State Land Creek, Blackfoot River, Upper Georgetown Creek, Goodheart Creek, Dry Valley Creek, Chicken Creek, Maybe Creek, Spring Creek, Upper Mill Canyon, Lower Spring Creek, Sheep Creek, Lower sheep Creek, Middle Sheep Creek, Angus Creek, Rasmussen Creek, and Upper Angus Creek.[2]

The diagram in Appendix 1, excerpted from a USGS report, shows the surface water flows from phosphate mines in southeast Idaho.

C. Impacts to Fish

Selenium in an aquatic environment is bioaccumulated and bioconcentrated by aquatic organisms. Toxic effects of selenium fall into two categories: 1) mortality of juveniles and adults, and 2) reproductive failure.[3]

The release of selenium from phosphate mines in Idaho has resulted in harmful levels of selenium in downstream fisheries. According to a USGS report, which analyzed selenium levels downstream of phosphate mines in southeast Idaho:[4]

> "Selenium was elevated to concentrations of concern in fish at eight sites (>4 microgram/gram [μg/g] in whole body). A hazard assessment of selenium in the aquatic environment suggested a moderate hazard at upper Angus Creek and Smoky Creek, and high hazard at Little Blackfoot River, Blackfoot River gaging station, State Land Creek, upper and lower Georgetown Creek, Deer Creek, and Crow Creek. The results of this study indicate that selenium concentrations from the phosphate mining area of southeast Idaho were sufficiently elevated in several ecosystem components

[1] Idaho Department of Environmental Quality, Principles and policies for the 2008 Integrated 303d/305b Report. May 22, 2009.
[2] Idaho Department of Environmental Quality, Principles and policies for the 2008 Integrated 303d/305b Report. May 22, 2009.
[3] U.S. Department of the Interior, Fish and Wildlife Service, Fish and Wildlife Leaflet 12, "Aquatic Cycling Effects of Selenium: Implications for Fish and Wildlife" 1989.
[4] Hamilton, S.J. and K.J. Buhl, Selenium and other trace elements in water, sediment, aquatic plants, aquatic invertebrates, and fish from streams in southeastern Idaho near phosphate mining operations: May 2001. Final Report as part of the USGS Western U.S. Phosphate Project May 23, 2003

to cause adverse effects to aquatic resources in southeastern Idaho."

Comments submitted by the Greater Yellowstone Coalition document additional research that illustrates that the impacts to fish are rapidly increasing and becoming more extensive.[5]

D. Impacts to Wildlife and Livestock

A particularly problematic pathway of selenium exposure can be present where livestock or wildlife feed exclusively on vegetation where selenium has bioaccumulated from growth medium or water. Animals exposed to high doses of selenium can themselves accumulate and biomagnify toxic concentrations of the contaminant and display symptoms of chronic selenium poisoning (selenosis).

There have been numerous incidences of livestock fatalities, which are attributed to selenium exposure, resulting from selenium releases at Idaho phosphate mines. According to a 2004 report,[6] incidences include:

> "In December1996, six horses grazing on private land downstream from the former South Maybe Canyon phosphate mine became ill and were diagnosed with chronic selenosis. Five of these animals had to be destroyed when it was determined they would not recover their health. Again in the summer of 1997, two horses pastured on the former Conda Phosphate Mine were diagnosed with selenosis and both animals had to be destroyed. In mid-summer 1997, 176 sheep were found dead in the Conda Mine area. The cause of death was not confirmed but selenium poisoning was not ruled out. Since then, other occurrences of multiple sheep deaths have been reported at the Conda Mine and Wooley Valley Phosphate Mine. Forensic examination of samples taken from the dead animals in each case showed elevated selenium concentrations in tissue and rumen although definitive conclusions as to the actual cause of the deaths were not made. Myocardial necrosis, a symptom of toxic selenosis, was found in the Wooley Valley sheep. Selenosis in the horses pastured in Dry Valley prompted agency and public concern that selenium releases from phosphate mining was apparently an environmental and potential public health concern."

And, more recently, a 2009 news article describes another incident where 18 cattle likely died of selenium poisoning near a southeastern phosphate mine.[7]

---

[5] Greater Yellowstone Coalition, Petition to EPA Administrator Lisa Jackson, Re: Petition to add phosphate mines to the list of facilities subject to the toxic release inventory program of the emergency planning and community right to know act," November 3, 2009.

[6] *www.fs.fed.us/geology/buck-jones.pdf*

[7] http://www.capitalpress.com/idaho/AP-Cattle-deaths-081409

E. Public Health Risks

According to the Agency for Toxic Substances and Disease Registry (ATSDR), impacts to human health can occur from the consumption of selenium-contaminated foods, including fish and wild game. Acute health effects include nausea, vomiting, diarrhea, and cardiovascular problems. Chronic effects result in hair/nail loss and neurological problems.

In 2006, the Idaho Idaho Bureau of Community and Environment Health issued a press release cautioning hunters to limit consumption of elk livers taken from the phosphate mining region of southeast Idaho due to elevated levels of selenium. The agency found that elk taken within ten miles from phosphate mining areas had higher levels of selenium.[8]

Temporary selenium fish consumption advisories have been issued in the upper Blackfoot Watershed of Idaho, downstream of the phosphate-mining region, in response to high levels of selenium in rainbow trout, brook trout and Yellowstone cutthroat.[9]

Conclusion:

Selenium releases from phosphate mines have resulted in widespread and severe impacts to aquatic ecosystems, fisheries, wildlife and livestock, and these releases represent a clear public health risk. What's more, the problem has escalated over recent years, with a growing number of effected water-bodies, and continued reports of livestock fatalities.

It's essential that the public have ready access to information about the amount of selenium released by phosphate mining to the land and water in and around their communities, so they can effectively understand the risks, and become advocates for solutions. We urge the EPA to initiate a rule-making to require phosphate mining facilities to report releases of Section 313 toxic chemicals to the Toxic Release Inventory program within the Emergency Planning and Community Right to Know Act.

[8] *www.sdhdidaho.org/psa/2006/oct/**elk**.pdf*
[9] http://www.atsdr.cdc.gov/hac/pha/pha.asp?docid=1052&pg=1#appa

Appendix 1. Excerpted from USGS Report.

Figure 1. Diagram of surface water flow from phosphate mines (generalized to 25% increments) to drains, creeks, and rivers in southeastern Idaho. Numbers are sample locations: 1 Little Blackfoot River, 2 upper Angus Creek, 3 Blackfoot River gaging station, 4 State Land Creek, 5 Smoky Creek, 6 upper Georgetown Creek, 7 lower Georgetown Creek, 8 Deer Creek, 9 Crow Creek.