



Alternatives North

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Box 938
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Re: Giant Mine Remediation Environmental Assessment (EA0809-001)

Alternatives North is pleased to submit this letter and the attached report by Dr. Joan Kuyek that examines the theory and practice of perpetual care of contaminated sites. Please file these documents on the Giant Mine Environmental Assessment public registry. This report provides some helpful examples and lessons learned that should be considered in the context of what happens to the Giant Mine. We expect to make use of this report in our participation and submissions before your Board.

Please note that there is a plain language summary for the report and that the summary is also submitted as a separate file.

We wish to acknowledge the financial support of the Department of Indian Affairs and Northern Development through the participant funding provided for this Environmental Assessment. Without this assistance, it is not clear that this work would have been possible.

We intend to hold a community workshop by invitation to discuss some of the ideas in this study, co-sponsored with the Yellowknives Dene First Nation. Discussions have been held with the Giant Mine Remediation Team regarding its participation as resource people and experts at the workshop. We will extend the same invitation to the Board for its staff to attend the workshop to provide information about the environmental assessment process. We will contact you regarding interest and availability to attend this workshop when we have settled on a date.

We expect that a report from the workshop will form a stand-alone submission for the Board's consideration during this proceeding. Should you have any questions about the attached report, I would be pleased to answer them for you.

Sincerely,

Kevin O'Reilly
Coordinator for the Alternatives North

SUMMARY

What is the problem?

Modern industry has been able to make lots and lots of products. At the same time, some industry has also made tons of unsafe waste – like arsenic. The science for taking care of the waste lags behind. Until science catches up, all we can do is keep the contamination safe. We may need to keep it safe for hundreds or thousands of years – or forever.

What is this report?

In fall 2010, Alternatives North hired Dr. Joan Kuyek to do a study. Giant Mine in Yellowknife, Canada, has 237,000 tonnes of arsenic trioxide to take care of. There is a plan to freeze this arsenic, so it can't leak out and hurt the people and the land. For the Environmental Assessment of this plan, Alternatives North asked for a study of how contaminants are managed in other places.

How was the study done?

The study was done in 5 ways:

- search the Internet for information
- read printed documents in English
- talk to people in affected communities
- talk to people from responsible agencies
- do case studies for places in Canada and the US

“Perpetual care” is a new problem. There is no long-term experience to look at. The only human construction to study is a building like the pyramids, and even the pyramids are not so old.

Who are the ‘responsible agencies’?

In Canada and the US, there are many government agencies responsible for long-term contaminated sites. Each agency works in its own way, and that way can be very complicated. Politics also plays a part in how an agency works. In Canada, government information is kept secret and released slowly.

How long is ‘long-term’?

The case studies in the full report include some nuclear waste sites. For these sites, perpetual care means 10,000 years. Arsenic is like nuclear waste in many ways. Both have no colour, taste, or odour. Both may cause death. Both can be breathed in or eaten. The dangers from these two toxic wastes are not easy to see.

Why did you talk about communities?

Most of the sites we studied are near communities who have pressed for a clean-up for many years. Often these are native communities. These people are still working toward clean-up. They expect to be living with the toxic site forever. The work of leaders of these communities is important and often unnoticed.

It is scary to study contaminated sites. How did a place like Chernobyl turn into a huge ‘sacrifice zone’ – a place with so much poison that nobody can live there? Fukushima in Japan has just turned into such a place.

This is a big problem. A government report in 2003 said that there are more than 217,000 toxic sites in the US. It goes on to say that most of these places will never be cleaned up enough to be safe. Perpetual care for these places is not good enough. The poisons will last longer than the safeguards.

LESSONS LEARNED

Most of the full report tells about 9 case studies. From these cases and other research, we have learned many things.

What Reports Say

1. Most plans for toxic waste look at less than 100 years in the future. The Giant Mine plan is for 50 years. Perpetual care (for thousands of years) needs a different plan. It needs to be part of the clean-up from the start.
2. Papers about toxic waste care agree that this is a big problem. There is not much else they have in common.
3. Nuclear waste has made people start to think about 10,000 years of safety. We don’t know about any human buildings that have lasted so long. Some of the oldest buildings are mysteries. We don’t know why they were built. In native cultures, there are special places you must not go into. When new people come, they ignore the rules and settle where they want. Sometimes, new religions cause people to harm the forbidden area.

Communities

1. Experts agree that local communities need to be part of any long-term plan. This is even more true when native people care about the land where the toxic waste sits.
2. However, a native community may be angry at the people who are asking for cooperation. After a history of trespass and abuse, the trust needed for working together may be missing.

3. Sometimes local people find out, too late, that the land and people have been made sick. Knowing this changes how they feel about themselves and their memory of times past. It is important that the people understand where the sickness comes from, so they can grieve, tell the story, and heal. The long-term plan for the waste site must include ways for the people to heal their spirit.
4. In most communities, there have been problems between pro-development and pro-cleanup sides. Even after we all know that toxic waste must be stored on site, the arguments may go on. Some people will worry about the toxic waste giving the town a bad name. To them, this is more important than the health of the people or the land.
5. The wish to keep the toxic waste a secret may be made worse by others. Government and industry may want to keep the secret in order to avoid costs of clean-up and perpetual care.
6. In each of the communities studied there had been a risk assessment. (This compares dangers to costs in dollars.) Because an insurance model was used for the risk assessments governments decided there was no proof that the toxic waste was connected to the very poor health of local people. The lesson learned is that the risk assessment model needs to be thought about some more.

Control of Access

1. The first step to take care of the waste is to keep people away. This means signs and fences, for example. After a long time, these ways of controlling access will likely fail. Usually, backup controls are also used.
2. Research papers tell about many ways to control access. Case Study 2 in the full report tells about most ways to control access.
3. Case Study 8 tells about the Waste Isolation Pilot Project in New Mexico. It includes a plan for special signs and markers intended to last 10,000 years.

Management

1. The laws for toxic waste sites are not good enough for long-term care. The laws need to cover:
 - emergency response
 - keeping records
 - regular environmental assessment
 - how to decide which government is responsible
2. Who should be in charge of long-term care? It has to be a High Reliability Organization (HRO), which must stress safety and reliability first, not profit, prestige or efficiency.
3. Being the organization in charge is a hard job.
 - How do you stay alert when nothing needs to be done for years?

- Can you still work well when responsibilities are split up over time?
 - How do you deal with groups that keep secrets from you?
 - Can you handle a sudden crisis?
4. The group in charge can't be too proud. They must admit to mistakes and ignorance. They should be able to change their ideas. When a method fails, it is important to be able to change to a different solution.
 5. The name Adaptive Management means being able to learn and change over time. When a crisis happens, there is no time to slowly learn and change. It is important to be able to see warning signs too. It is important too that you don't hide being lazy and cheap by calling it 'adaptive management.'
 6. Good adaptive management can be part of teaching people and changing their ideas.
 7. Communities near a toxic waste site should be part of the management, but not have to pay for long-term care. This may cause problems with government officials. They may not like the community being in charge.

Records

1. Public access to records is not easy. There are many laws and agencies responsible for the records of waste sites.
2. How can records be kept despite major changes? Changes like earthquake, fire, revolution, electrical failure, new computer systems. There are no good answers yet.
3. Who will have access to the records in the future? How easy will it be for the public to see them? Having a website isn't enough. The records need to be complete and up to date. In Canada, the Access to Information Act is very hard to use.

Inspections and Data Analysis

1. Waste sites must be watched carefully and regularly. In this way, early leaks and other problems can be found. What is sampled? Who does it? How often? Most places use 5-year contracts. There is a danger that someone might want to save money by cutting the contract.
2. A well-funded independent monitoring group is a good model. They need to be responsible to the local community.
3. Collecting data isn't enough. It needs to be studied at regular times. If this work is done by contract, responsibility must be fixed. Think about how this can be done over centuries.

Maintenance

1. The small parts of a system can fail in odd ways. When 2 or more parts fail, they might make the whole system fail. No matter how careful you are and how much safety is built in, surprising small failures can bring it all down.
2. There are many maintenance questions.
 - How is the protection system maintained?
 - Who does it?
 - Who is responsible for taking real action on inspection results?
 - How do you consult the community on technical things over a long time?
 - Does the public have a way to get technical advice?

It is important that skills and materials are available to fix later problems.

Emergencies

1. It is very clear that people have to be watchful and activist to get attention for toxic contamination. There is no reason to think this might change. A slow leak or failure will still need political action to get a response.
2. A disaster can be caused by:
 - neglect over time
 - earthquake, fire or flood
 - riots
 - many small equipment failures

Perpetual care has to know who is in charge of acting in a disaster and who will pay for the response.

3. Most of the case studies show that local people had been lied to many times about how toxic the waste was. The risks had been down-played until the truth was forced out. How will the long-term plan make sure this doesn't happen?

Money

1. It is hard to keep adequate funding for long-term care. Most programs in the case studies have to renew their funding every year. And each year they have to compete for the money in a political arena.
2. Some people recommend trust funds to fund perpetual care.
 - How is the bond set?
 - How is it renewed?
 - Does this funding depend on economic growth?
 - How do you avoid losing the bond to crime?

3. However, these funding ideas have a false basis. They assume that economic growth will never end. They don't make any room for changes in the environment. They also count on smaller costs, which is not fair to future generations.

More than One Generation

1. Many writers say that it is important that native people be able to carry on the story of the site. They need to be able to train the next generation to guard the site.
2. Keeping toxic waste protected (or frozen) just passes on the responsibility to future generations. Even if there is enough funding, some day centuries from now the protection system will fail. Funding will not make up for the huge dead zone that will result.
3. We must admit that long-term care will require support from many generations. Several Native American tribes have issued a statement that talks about taking care of the land for the seventh generation to come.
4. Some of the people alive today are suffering from bad decisions made in the 1940s and 1950s. If it is possible today to make toxic waste non-toxic, it should be done – no matter what the cost. The long-term cost of taking care of the toxins will always be more.
5. In the future if new ways are found to neutralize toxic waste, does the plan allow them to be used? Or does it make it difficult? How does the plan treat new ideas, so the toxins can be neutralized some day?

Using the Lessons

1. There needs to be planning for the short and long-term future. Experiences with toxic sites need to be shared with the public, between governments, and between other who make decisions. The case studies can help with this planning.
2. The UNESCO World Heritage sites program has many resources to help. They are from many countries, in many languages. They tell about ways to save things and how to repair them. UNESCO also has experience with the politics of protecting places and how to share what you have learned.
3. Perhaps the most important lesson learned is not for the future, but for right now. The lesson is to include future costs and risks into current planning. The costs to the people and the land should not be less important than economic growth.