



COMMUNICATING WITH FUTURE GENERATIONS

SUMMARY OF WORKING GROUP DISCUSSIONS ON GIANT MINE, YELLOWKNIFE, NWT

This report documents the work of the Communication with Future Generations (CFG) Working Group formed in Yellowknife. The CFG group is a multi-stakeholder group that is considering how to communicate the long-term arsenic hazard at Giant Mine to future generations. The CFG group is made up of representatives from government, First Nations, Métis, mining heritage advocates, environmental/social justices NGOs, and universities.

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What is the CFG Working Group?

The Communicating with Future Generations Working Group (CFG) was formed in November 2014 as an information-sharing mechanism for interested parties and stakeholders in the Giant Mine remediation process. It has focused on building strategies for communicating with future generations about the management needs of the site. The [Giant Mine Remediation Plan](#) proposes to freeze 237,000 tons of toxic arsenic trioxide dust where it is currently stored underground. It is likely that water pumping, monitoring, and maintenance at the site will be necessary for a very long time to prevent the arsenic from seeping into the local environment. The recent [environmental assessment](#) of the project requires ongoing research into a permanent solution to the arsenic problem at Giant Mine within a 100-year time frame. Despite this, a century is a long time and there is no guarantee that technology can be developed to safely remove all arsenic from the site.

Recognizing that there is a commitment to develop a comprehensive perpetual care plan for the site by the managing governments, the CFG Working Group's efforts contribute towards the development of such a plan by drawing on the existing, albeit limited, research on similar sites. The CFG Group will also mobilize and help develop ideas from interested residents of Yellowknife, and the Yellowknives Dene First Nation, on how to communicate about the toxic hazards at Yellowknife with future generations. The Working Group operates as a multidisciplinary, crosscutting working group with members from academia (Professors John Sandlos and Arn Keeling are from the [Toxic Legacies Project](#)), all levels of governments, Indigenous organizations, artists and community organizations.



THE CFG WORKING GROUP

- Yellowknives Dene First Nation
- North Slave Métis Alliance
- Giant Mine Remediation Team (GNWT, INAC)
- Giant Mine Advisory Committee (GMAC) NWT
- Alternatives North
- NWT Mining Heritage Society
- Memorial University of Newfoundland

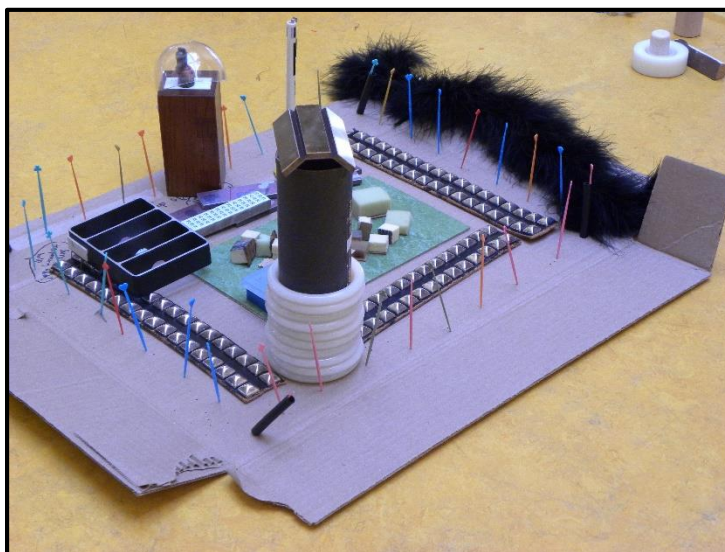
What is the Toxic Legacies Project?

The [Toxic Legacies Project](#) is a [SSHRC-funded](#) research initiative that produces publically accessible material (film, newsletters, workshops, reports, etc.) on the history and legacy of arsenic contamination at Giant Mine. It is a partnership among researchers at Memorial and Lakehead Universities, Alternatives North, and the Yellowknives Dene First Nation and has a number of goals and initiatives, including the following:

- An educational website on the history of arsenic pollution at Giant Mine from the perspective of the Yellowknives Dene
- A community mapping study on land-use change at the Giant Mine site
- Workshops and [reports](#) on how to communicate with future generations about the dangers of arsenic at the Giant Mine site
- A documentary film, [Guardians of Eternity](#), on Giant Mine and communicating hazard to future generations
- A study of the Giant Mine Remediation Plan and environmental assessment

The CFG Group: Previous Work

The CFG working group has met regularly since September 2014, including two sessions with guest speakers. Meetings typically last for an hour with on average about 7 attendees. There is usually a thematic topic for discussion and a chance for general updates. Minutes are circulated to the group and posted online at toxiclegacies.com.



Conceptual model for Giant Mine warning system, built by YKDFN youth (photo: J. Sandlos)

This report is a short overview and analysis of those discussions. Its purpose is to consolidate the work so far to assist with reflecting on next steps.

The report released September 2014 [Communicating Danger: A Community Primer on Communicating the Arsenic Hazards at Yellowknife's Giant Mine to Future Generations](#) by John Sandlos, Arn Keeling

and Kevin O'Reilly has provided the background research and framework for the CFG conversations. It is a survey of the existing literature on communicating into the future, which is focused on nuclear waste sites.

The main important lessons from the report are outlined below and appeared frequently during CFG discussions:

1. Systems meant to directly deter intrusion, such as fences and gates, are likely to collapse in roughly 100 years due to failures of funding and governance structures.
2. Deterrents to intrusion that do not require maintenance, such as warning signs, symbols and text, are likely to last longer.
3. Plans to communicate with future generations should include some imagining of what that future might be like.
4. Because it is difficult to imagine the future accurately, plans to communicate hazard should rely on multiple ways of conveying danger organized into a coherent system of communication (*Communicating Danger*, 6).



Thermosyphon test plot, Giant Mine – A type of monument? (Photo: J. Sandlos)

What did the CFG Group Talk About?

The CFG Group discussions were largely structured around these multiple ways of communicating, which are outlined in the *Communicating Danger* report as five distinct levels of messaging:

- Level 1 Messages are meant to grab people's attention, like a monument or building.
- Level 2 Messages include signs, symbols and large text that convey danger.
- Level 3 Messages are more complex and include a combination of text, images and site-specific information. Messages may be engraved on large surface markers
- Level 4 Messages contain a high degree of complexity and technical information, like potential leakage pathways, geological features and layout of the site.

- Level 5 Messages are archives containing technical summary manuals and as complete a documentary record on the site as possible intended to give future generations the information to respond to any problems that may occur.

This Report draws out themes from the CFG discussions based on minutes from those meetings. While CFG meeting agendas followed the different levels of messaging, discussion flowed freely and moved between topics, sometimes envisioning future scenarios, other times focused on technical challenges. For this reason, rather than follow the chronology of meeting minutes, this report uses the following narrative structure as suggested in the *Communicating Danger Community Primer*:

- A. Envision future scenarios, with an emphasis on social and political conditions;**
- B. Highlight problems, challenges and issues related to communicating the toxic threat to future generations;**
- C. Consider key messaging strategies as part of a system of communication for the Giant site; and,**
- D. Propose an implementation strategy for the Giant Mine messaging system.**

At the time of writing, it has been suggested that rather than approaching directly the fourth topic of an implementation strategy, we compile a report based on community outreach in the next year that can inform an implementation strategy.

A. ENVISION FUTURE SCENARIOS: SOCIAL AND POLITICAL CONDITIONS:

The committee's discussion of the future included reflection on how much has changed around Yellowknife in the last 150 years: the arrival of new languages and cultures, new technologies and treatment of land and animals, a new form of government, new forms of trade and communicating. All of these factors and more will likely change unrecognizably over the next thousands of years. Who will live here? What languages will they speak? Will Canada still exist as a country and government? What will the climate be like? As the *Communicating Danger Community Primer* states: "The answers to these questions are difficult if not impossible to determine, and certainly point to the challenge of trying to communicate long term dangers and perpetual care requirements across generations. The future is, in effect, a moving target: we don't know much about the audience to whom we are sending messages"(6).

However, it is worthwhile at least to attempt an answer to these questions, imagining different messaging strategies to communicate as broadly as possible with future audiences. Below are suggestions from our meetings, responding to a range of possible future scenarios:

1. In the current plan, the remediated site could include residential, recreational and some restricted access. How can the final surface design for the site contribute to the goal of communicating with future generations? Suggestions included interpretive signage and a walking trail. Other committee members suggested a focus on creating cultural institutions that use and monitor the spaces, such as a running group or regular gatherings (including spiritual gatherings), or perhaps regular facilitated access to the site as a way to keep the knowledge alive.

2. Think of the thermosyphons as a form of monument that will have to exist for eternity. How do we use them to convey useful messaging? Suggestions included ensuring there are reasons for people to check on them and remain attuned to them, through signs, stories and gatherings.
3. The YKDFN and the broader Dene population have been around since time immemorial and will likely continue to be around for years to come. They should be key participants in the development of any messaging for future generations, ensuring the creation of communication methods that are culturally appropriate. CFG committee members suggested a focus on healing the land and Dene spirituality be part of any messaging system.

B. HIGHLIGHT PROBLEMS, CHALLENGES AND ISSUES RELATED TO COMMUNICATING THE TOXIC THREAT TO FUTURE GENERATIONS:

This theme raises questions and issues similar to those raised by envisioning future scenarios but in more technical detail:



Conceptual model for Giant Mine warning system, built by St. Patrick High School students (photo: J. Sandlos)

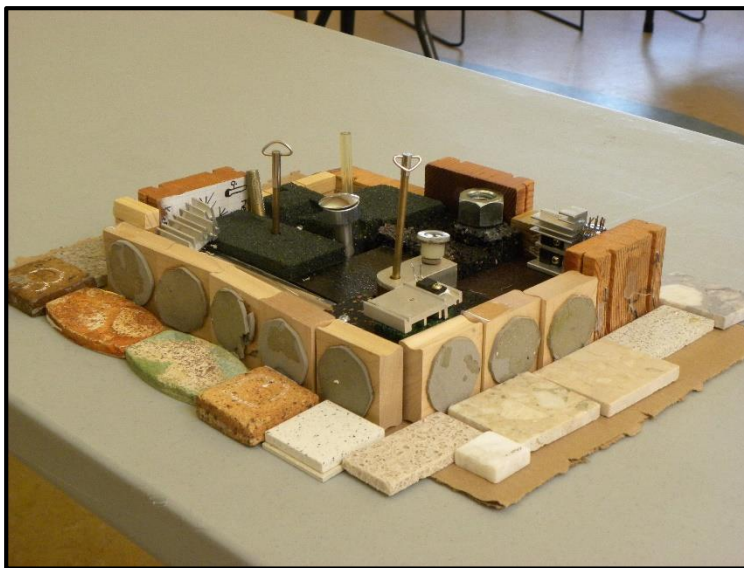
1. The main threat at Giant is not immediate toxic release; rather, it is that knowledge about the management requirements of the site will not be successfully communicated. As arsenic is colourless and odorless, toxic release would likely appear subtle. If knowledge of the site is not effectively communicated, a release could go unnoticed, causing massive destruction, but the source of which remaining a mystery.
2. The committee discussed mechanisms to update information storage; for example, if language is changing, what would we do to make sure everything gets translated? One committee member mentioned how Fort Franklin is now called Deline, but in many of the old records it's referred to as Fort Franklin. How do we bind those two words together?
3. There is tension between preventing access and allowing access at the site – which option has the least potential for harm and the best potential for transmitting knowledge? This was a big issue for the experts who worked on the issue of communicating with future generations about

stored nuclear waste at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. They concluded that people should be warned away from the sited, concerned that if people regularly go there it becomes an acceptable or “safe” place to hang out. Once again, because of the requirement for ongoing maintenance at Giant Mine, this issue may be framed differently than in the case of nuclear waste.

4. Committee members raised concerns that, while everything is digital now and that is the best way to connect with youth, digital mechanisms change very quickly. Do we try and stay ahead of the curve? Or do we focus on historic technologies that are slower to change? Many committee members suggested the adoption of both approaches. An app or game that transmits knowledge about Giant might, for instance, be powerful for keeping that knowledge alive in the culture. There are also digital mechanisms used in archives to preserve information. Ian Moir from the NWT Archives recommended to the committee that PDF/A is the professional standard for the digital preservation of documents. He also suggested looking into Records Management Programs. On the other hand, paper can be durable backup for a certain period of time although high quality acid-free paper is required.

C. CONSIDER KEY MESSAGING STRATEGIES AS PART OF A SYSTEM OF COMMUNICATION FOR THE GIANT SITE:

Throughout our meetings, concrete suggestions for messaging were made. They are listed below. The backdrop to this is the importance of using many and multiple kinds of messaging:

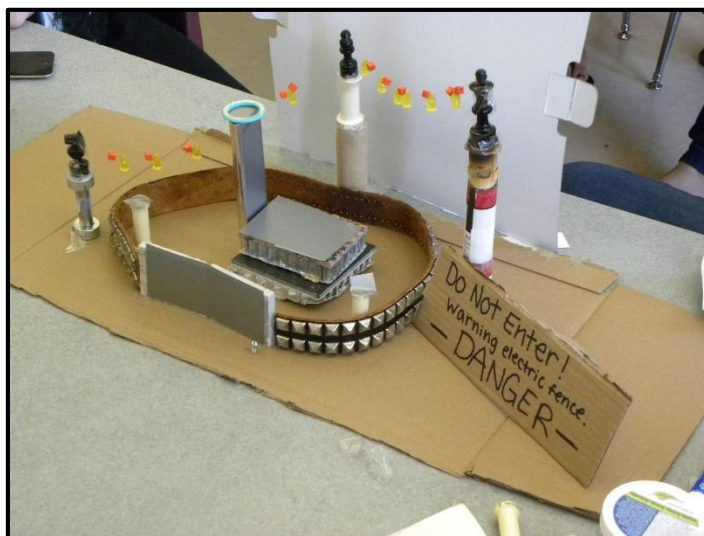


Conceptual model for Giant Mine warning system, built by YKDFN youth (photo: J. Sandlos)

1. It is critical to provide information identifying key features at the site and their purpose, especially the thermosyphons, the water treatment facilities, the tailings areas, and the underground arsenic storage chambers. Explanatory maps and/or site models should be widely available at the site and in the community.
2. Rather than “Danger,” signs should say “Stewardship” or “Maintenance Required.”

3. Multi-level messaging is needed, using multiple forms of media. There must be messages about human safety and also about maintaining the integrity of the site: i.e. "Care for the Land, Care for the People."

Messaging needs to promote and/or maintain the relationship between the people and the place. Messaging should inform how and where other messages are located, and systems of messaging should promote continuity of knowledge about the site. For example, messages could require that individuals walk through parts of the site, promoting knowledge about individual components of the maintenance. Messages about the site may also be transferred at regular gatherings.



Conceptual model for Giant Mine warning system, built by YKDFN youth (photo: J. Sandlos)

4. A collaborative approach is needed in building the messaging so there is widespread buy-in and knowledge.
5. The site will require strong messages about vandalism and how to maintain important equipment. One committee member raised concerns that people in the future might shoot at or otherwise vandalize the thermosyphons if they do not know what they are for. The site will require messages about what is a normal time period for thermosyphons to be replaced, and instructions for maintenance as well as barriers and signs to discourage vandalism.
6. There should be signage underground, e.g. don't drink any leaching water.
7. Other signage ideas included using comics. A model could look like this: a first comic panel with everything frozen and a second panel (or series of panels) showing the underground chambers thawing, with toxins leaching and fish floating with x's on their eyes. The comic and other materials could be linked to the ongoing requirement for electricity. If there is no electricity, then a dangerous thaw scenario is likely, at least over a long period of time.
8. If no solution to the underground arsenic problem is found, we can assume that over very long periods of time there will be a break in communication. A communication and warning system for the site must include ways for future generations to rediscover the site and all the information needed to maintain it.

9. The long-term inevitability of a break in communication should feed into the design of the site, which must have low technology and low energy requirements wherever possible, with plain language instructions
10. The archives can play a role in maintaining information: its legislative mandate is to archive the records of the GNWT, which will capture Giant records via the Department of Environment and Natural Resources. However, they may not be in a format that is useful for communicating with future generations. Mechanisms are needed that could compliment this existing function.
11. In terms of the archives and which media is most durable, digital is the format many institutions are using, even if only for backup in the form of a stable file format, such as PDF/A. Also, documents are increasingly born digital and this will likely continue.
12. There was discussion about transmitting oral history and traditional knowledge, especially since oral history is not always recorded in digital formats. While people may publish books or stories on the web, the stories are still being told in the old way, face-to-face.
13. Oral tradition and stories are connected to anomalies on land; therefore remediating the site to look just like surroundings may hinder the retelling of important stories about Giant. This point emphasizes the importance of being on the land as stories and lessons are triggered by what you see.



Conceptual model for Giant Mine warning system, built by YKDFN youth (photo: J. Sandlos)

14. There are ideas from the film Guardians of Eternity about creating a new story about a monster underground. See trailer for excerpt: <https://vimeo.com/35522130>.
15. There was much discussion of holding a spiritual gathering annually at the site (perhaps building off of the YKDFN solstice healing festival).
16. There was discussion of getting people, especially youth, on the land in an orchestrated way so that they learn, e.g., school fieldtrips (and so that it doesn't become an alluring, "forbidden" place). Currently the Toxic Legacies Project is working to develop a curriculum supplement for students in the NWT Grade 10 Northern Studies course.

17. We discussed the role of a “priesthood” or culture of stewardship and guardianship. What would the visual identity be of a group of “Stewards of Giant”? Perhaps it could be similar to the Snow King badge. Such visual markers are important so the stewardship role is publicly celebrated and seen, which simultaneously increases knowledge and awareness of the site. How would this culture of guardianship emerge? It could be similar to having a Poet Laureate of Giant Mine. Who pays for this role?

D. DISCUSS AND PROPOSE AN IMPLEMENTATION STRATEGY FOR THE GIANT MINE MESSAGING:

The final suggestion for discussion outlined in the *Communicating Danger Community Primer* is to “Discuss and propose an implementation strategy for the Giant Mine messaging.” There have been discussions in the CFG group about our mandate, or lack of mandate, to propose such a strategy, and sensitivity to being an information-sharing, discussion-oriented group. At the time of this report, the current approach is to host a larger community outreach event to gather and share information on this topic. This would result in a final *Community Primer* report with a focus on the Giant Mine and the local context here. That information can feed into the design and implementation of a perpetual care plan by the respective governments.

Conclusion

The CFG meetings have been a useful space for considering and sharing ideas and information about communicating to future generations. We are planning to develop the ideas presented in this report and generate ideas through community workshops and online consultations.

Further Information

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