Regulating Idle Uranium Mines In Canada

Ron Stenson

Canadian Nuclear Safety Commission, P.O. Box 1046, Station B, Ottawa, Canada K1P 5S9, E-mail: stensonr@cnsc-ccsn.gc.ca

Abstract. On May 31, 2000 the *Nuclear Safety and Control Act (NSCA)* came into force in Canada. As a result of changes introduced in this new legislation new attention was brought to the assessment and regulation of these legacy properties. Most were abandoned and their safety and long-term management is the responsibility of various levels of government. Canadian Nuclear Safety Commission (CNSC) staff initiated the Contaminated Lands Evaluation and Assessment Network (CLEAN) program to determine what regulatory activities were required at these and other sites in Canada. The idle mine portion of the CLEAN program began as an outreach program to inform various stakeholders of their responsibilities under the *NSCA* and to catalog the available information for each of these mines. This resulted in two separate initiatives, one to licence high-risk sites and one to exempt radiologically low-risk sites from CNSC licensing.

Introduction/Background

Radium mining in Canada began in the early 1930's. In the early 1940's uranium mining replaced radium mining and continued through two periods, the first of which ended in 1963 with the end of foreign sales guarantees. The second phase started in the 1970's, and is still ongoing, with significantly more increased interest starting in 2004.

The majority of early uranium mines in Canada operated with little or no regulation from the Atomic Energy Control Board (AECB). Those still operating in the 1970's to date were licensed and inspected by the AECB with worker safety being the initial concern, before progressing to include environmental and international obligations on security. The AECB regulated these sites as the lead in a Joint Regulatory Group. This meant that both Provincial and other Federal agen-

cies with a mandate that applied to the sites were involved with the AEBC in regulatory reviews and inspections.

Prior to the 1970's, the AECB issued various types of permits under the Atomic Energy Control Act (AECA) which allowed the mine and mill to operate. Usually, the only condition attached to these permits was that the mine/mill needed to be operated in compliance with Provincial health and safety standards. One other stipulation included in the permits was that the operator had to have a contract with Eldorado Nuclear, a federal Crown corporation, to sell all products to them. Eldorado was responsible for meeting all international sales contracts.

In 1963 when guaranteed sales of uranium in support of international contracts disappeared, so did many of the mines and mills in operation at the time. Many owners literally sent their employees home and walked away from the now non-profitable mines.

The legacy that this left was social, economic and environmental. Unconfined tailings and waste rock drainage were left unchecked until the 1980's. Control of most of these sites fell to the Provincial/Territorial governments. Since the AECA did not bind these governments the AECB could not require that these sites be remediated. It should be understood that until the mid-1970's there was little public or political concern for the potential hazards at any mine sites, including uranium mine sites. Unless there was an obvious problem, little was done at these sites.

During the 1970's both the Provincial governments and the AECB began to require any idle uranium mine/mill sites under private ownership to begin remediation. These existed primarily in Bancroft and Elliot Lake, Ontario. Any operating mine/mill sites were licensed and at the end of their operations were required to undergo decommissioning. This resulted in Beaverlodge (northern Saskatchewan) and Madawaska (Bancroft, Ontario) being decommissioned in the early 1980's. Various sites in Elliot Lake, Ontario were decommissioned in the 1990's. Currently Cluff Lake (northern Saskatchewan) a modern mine that was assessed and built in the early 1980's, is undergoing decommissioning.

Any remediation at other sites was not done under AECB license and although it met the general standards of the day, the AECB only provided advice, not guidance. During the 1990's the AECB had approached those they believed to be in control of the idle uranium mine/mill sites to apply for AECB licenses. However, the AECA could not compel a government agency to apply for a license and the private sector companies that controlled other sites resisted. This was primarily because the current companies were not the original operators of the mines and resented having to assume the long-term liabilities associated with remediation under a perpetual license. To address the long-term liabilities associated with monitoring and maintenance of these facilities discussions were begun with the Provinces that, it was hoped, might lead to the Provinces taking over management of these sites in the future.

Since the NSCA was imminent, it was decided by the AECB not to pursue licensing under the AECA, since it was not yet clear what the requirements would be under the new Act.

The CLEAN Program

The idle mine portion of the CLEAN program began as an outreach program to inform various stakeholders of their responsibilities under the *NSCA* and to catalog the available information for each of these mines. After the initial, and somewhat crude, cataloging of the numerous mine sites (only 19 had mills), it was decided that there were two separate groups to consider. A risk-informed approach quickly identified the sites with tailings as the higher-risk sites (Fig. 1). The others, mostly small mines that shipped the ore off site for milling, shared very few concerns with the tailings sites. Somewhere in the middle were sites with large waste rock inventories. These coincidentally tended to be associated with sites with mills and tailings. Two initiatives sprung from this assessment. The first was to license the so-called higher-risk sites. The second was to characterize the idle mines without tailings and determine the appropriate regulatory approach to be taken.

Contact was made directly with the person last known to have responsibility for managing the higher-risk sites. In retrospect it was lucky that many of these people were still in place. Since the CLEAN program began retirements have resulted in the loss of knowledge and of personal "ownership" of the sites.

Three workshops were held over three years. The first of these was to bring together the prospective proponents for the sites and provide them with information on the requirements of the NSCA and the process that needed to be followed to bring all of the sites under CNSC licenses. It was also an opportunity to create a

Fig. 1. Location of tailings management sites from now idle uranium mines in Canada.

community of proponents who could communicate with each other and take advantage of each other's experiences and expertise. The workshop was well attended and provided the basis for the next workshop about a year later. The second workshop brought together not only the proponents, but also CSNC specialist staff was available to help coach the group on our expectations for various studies required to characterize and assess the sites. Specialists from the CNSC environmental protection group, geosciences group, and the licensing group all attended. The third and last workshop brought together the proponents and various other regulatory agencies from the Provincial and the Federal government. These agencies provided information on their various requirements for long-term site monitoring and maintenance.

Between each workshop CNSC staff stayed in communication with the various proponents and provided guidance and support to move the proponents through the licensing process. CNSC staff was also in contact with the various regulatory agencies that had an interest in these sites, the JRG. This gave rise to an awkward hurdle. Some of the JRG members were also proponents for other sites. Since the NSCA now bound other government agencies the CSNC was now required to regulate other regulators. This was the case in Ontario where two sites (one mine, one contaminated land site) required licenses, in Saskatchewan where two sites required licenses, and in the Northwest Territories (NWT) where numerous sites (one mine) required licenses. Although every attempt to treat all proponents the same has been our standard operating procedure, there were very good arguments to stray from this policy.

The CNSC had to be sensitive to the mandates of other regulatory agencies. These agencies have their own, often different, political priorities and imperatives. Although everyone recognized that the law applied to him or her, delivering his or her own mandate took precedence. Some agencies resented the CNSC involvement in their affairs, while others had rigid decision-making structures that hampered communication. In the end, familiarity and visible respect were seen as the paths forward. Extra time was built into the CNSC's normal processes to allow agencies to adjust to their new roles and to encourage constructive dialog.

Two things were done specifically to deal with the immediate problems of regulating other government agencies. The first was that staff requested temporary exemptions from the requirement to license the possession, management and storage of nuclear substances at these sites. This allowed sufficient time for the agencies to meet licensing requirements without radical internal changes. The second was a complicated exemption from cost recovery fees for government agencies associated with these sites. Both of these required a lot of staff time and were unprecedented decisions under the new Act.

It should be noted that all of the same safety and long-term management requirements at these sites apply equally to private and public sector licensees. Only time and cost recovery considerations have been made.

Two examples of how the CLEAN program has made adjustments to allow other government agencies to maintain control of their own mandates are the licensing of the Port Radium idle mine in the NWT, and the licensing of the Gunnar idle mine in Saskatchewan. Indian and Northern Affairs Canada (INAC) had al-

ready begun a community-based process to identify concerns at the Port Radium site. This process saw the native community at Deline working as a partner with INAC and other federal departments to both assess the site and to determine the best possible remedial options for the site. The CSNC began sitting as an observer at the table in 2000. Rather than push for licensing commitments and potentially complicating an already complicated social and cultural situation, CNSC staff requested a series of exemptions from the requirements to license the possession, management and storage of nuclear substances at the site until the end of 2007. This has allowed the INAC/Deline process sufficient time to evolve into a solution and a license application is anticipated from INAC by the end of 2005.

In Saskatchewan, where the Provincial government controls the Gunnar idle mine site, the CNSC has granted a similar exemption to allow the Province to implement an Institutional Control Policy for the long-term management of idle mine sites. This is the first such policy in Canada and will help to address industry concerns that long-term management (perhaps thousands of years) under a CNSC license is an impractical requirement both legally and financially.

A new approach has recently grown out of the CLEAN program project to license higher-risk mine/mill sites. It was the formation of a network of stakeholders called the Canadian Uranium Regulatory Examination (CURE) Team. CURE is composed of representatives of government (Federal, Provincial, and Municipal) and the private sector. It is looking at the long-term disposition of higher-risk uranium mine and mills sites. Some areas being followed are potential changes to current regulations, public perception and institutional controls.

The second initiative was the characterization of idle mines without tailings. This program involved the identification through provincial/territorial records of almost 80 idle mines across Canada. The majority of these are in northern Saskatchewan and central Ontario. These mines shipped the ore they recovered to local mills for processing. Once a primary list was made CNSC staff gathered as much information as possible about each mine. This was aided in Saskatchewan by a very recent survey of all of their idle mines and the publication of two volumes detailing the 40 uranium mines in the Province.

Based on the information available a basic risk assessment was applied to the sites. This was difficult to do in Ontario and the NWT since no radiological information was available in provincial records. CNSC staff then selected about 20 of the most likely higher-risk sites and field-proofed the available data during two campaigns. Radiological data was gathered for some sites that previously did not have any.

In the end it was determined that none of the idle mines without tails posed a radiological hazard. The Provinces already regulated the mines for conventional and environmental hazards. In the absence of a radiological hazard, it was seen as duplication and overlap for the Federal government to regulate them.

CNSC staff recommended that the Commission grant a permanent exemption from the requirements to license the possession, management and storage of nuclear substances at these mines (as specifically listed in an appendix to the exemption). It was granted in December 2004.

Conclusion

Although the uranium mines portion of the CLEAN program was only one of ten concerns, it has accounted for about half of the resources and time expended. It has shared a common philosophy with the rest of the program, but has had unique and important challenges particular to it. Through patience and flexibility the CLEAN program has dispositioned 75 idle mines without tailings and has licensed 16 of the 19 idle mines with tailings across Canada. The remaining three are at various stages of licensing and immediate safety precautions have been taken at the sites.

The program has taken a soft rather than a hard approach to regulating. If hazards existed they have been, or are being, dealt with. Time was the most important and available concession used to enable those in control of the sites to comply with the NSCA. Although the primary aim of the CLEAN program was to bring sites under the appropriate regulatory control, a secondary aim was to develop good licensees. This approach was an investment in the future as we continue to work with the network to fulfill the CNSC's safety mandate