SRB TECHNOLOGIES (CANADA) INC.

2006

Report and presentation to the
Pembroke City Council
by
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and resident of Pembroke

SRB, Part of Your Community

Company Background

- In operation since 1991.
- Is located at 320 Boundary Road in Pembroke.
- Employs 36 local residents.
- Regulated by the Canadian Nuclear Safety Commission (CNSC).
- We’re committed to:
    - Protecting the local environment
    - Protecting the public
    - Protecting our employees
    - Meeting or exceeding the safety requirements of the CNSC
    - Growing our business here in Pembroke

Outline of Company Products

- Our products are used in safety and emergency applications all over the world.
- Without any source of power, our products will continue to generate light and guide people to safety.
- We manufacture safety and exit signs for use in buildings. Our signs are installed in many schools, hospitals, restaurants, factories, sewers, mines, dams and other buildings where one tries to reduce costs of maintenance, wiring and electricity.
- We are the sole supplier of tritium aircraft signs for Bombardier and many other large aerospace manufacturers.
- SRB manufactures many illuminated products used by Canadian, British, American and other peacekeeping troops.
- We supply a variety of light sources for use in watches, gun sights, compasses, gauges, dials and other lighting applications.
- There is no external radiation hazard from our products.
- The Betalights™ and devices are thoroughly tested to minimize the possibility of breakage.

Description of Manufacturing Processes

- All products manufactured and designed by SRB use Betalights™

- A Betalight™:
  - Is a sealed glass capsule
  - Coated with a phosphorescent powder
  - Filled with tritium gas:
    - Isotope of hydrogen. [1]
    - Already present in the environment and in the food chain. [1]
    - Produced naturally in the atmosphere. [1]
    - Produced as a byproduct in nuclear reactors. [1]
    - Used in studies investigating the safety of potential new drugs. [1]
    - Disperses quickly in the body and is excreted through the urine within a month or so after ingestion. [1]

- We have the ability to safely recycle tritium gas from expired Betalights™ for use in new products.
- Radioactive waste is disposed of to a CNSC licenced facility, or by other means with the approval of the CNSC.

Glassblowing

Coating

Tritium Processing

Assembly

Reference Documentation

1. United States Environmental Protection Agency.

Monitoring

- SRB continuously monitors tritium releases and the local environment to ensure regulatory compliance and public safety. Results are communicated to the CNSC in annual compliance reports which are also available on our website or by contacting the company.

WHAT IS MONITORED	FREQUENCY
Facility stack emissions	Weekly
Environment with passive air samplers	Monthly
Liquid effluent	Daily
Staff urine	Weekly
Locally grown vegetables	Yearly
Local dairy products	Yearly
Precipitation, wells and pools	Random

Groundwater Study

- Our current licence required us to have an independent third party perform a groundwater study by March 31, 2006 to mainly:
  - Define groundwater contamination on and around the property.
  - Characterize all sources and causes of groundwater contamination.
  - Assess potential adverse impacts of the contaminated groundwater.

- We hired an independent third party ECOMETRIX INC. with expertise in performing assessments of nuclear and radiation issues, including assessments of tritium in groundwater, for other CNSC licensees (Ontario Power Generation, Bruce Power, New Brunswick Power, Hydro Quebec and AECL).

- We have also hired Dr. Richard V. Osborne of RANASARA CONSULTANTS INC. to provide comments on the study and advise on future public interaction.

- As part of the study, samples were collected and analyzed from 12 monitoring wells (7 new and 5 existing wells), 7 residential wells, surface water in 2 local rivers, soil samples and precipitation and snow samples

- The level of tritium in all residential wells were below the Drinking Water Guideline of 7 000 Bq/L.

- The level of tritium in the closest residential well to SRB was less than 2 000 Bq/L.

- The level of tritium in monitoring wells were well below the Ontario drinking water guide line of 7 000 Bq/L, except for a monitoring well on the SRB site.

- The level of tritium in this well was approximately 60 000 Bq/L. This is located on the SRB site and is closer than any other well to the stacks of the facility.

- Following its review of the study, SRB took several actions which were reported to CNSC staff in a letter dated May 15, 2006. SRB believed that it was important to perform continued and extended testing on site where SRB is located to further reinforce the conclusions of the study.

- On June 30, 2006 CNSC staff provided their review of the study. CNSC also stated that the study had identified the magnitude and extent of groundwater contamination by tritium beyond the borders of the SRB facility's site and confirmed that there is no immediate health risk to persons living in the area.

- CNSC staff also stated that the possibility of a groundwater tritium plume of limited size leaving the facility could not be entirely rejected. CNSC also stated that the potential limitations on future use of land contaminated by tritium were not identified and discussed.

- CNSC staff met with SRB staff on July 11, 2006 to discuss the comments in their letter and additional work to be performed on the site where SRB is located.The additional work includes continuation of the testing that SRB had initiated after review of the study in addition to the measurement of rates of infiltration at each well, the measurement of water level rise and fall in response to infiltration events and a soil sampling survey.

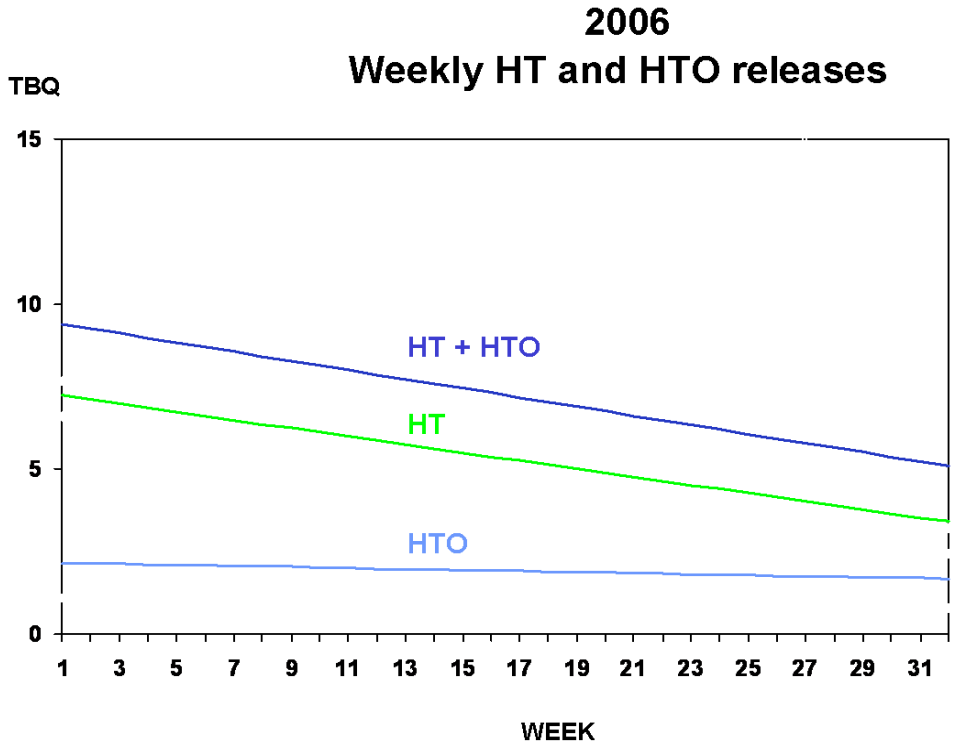
- On July 21, 2006 CNSC staff issued SRB a request to install 3 additional wells on the SRB site.
- On July 26, 2006, as part of the work required in the June 30, 2006 letter, SRB submitted CNSC staff detailed discussions on potential limitations on future use of land contaminated by tritium. These discussions confirmed that the City of Pembroke had a zoning By-Law requiring all buildings in Pembroke to be serviced by municipal water, in these discussions the City of Pembroke also confirmed that any development or redevelopment of the property would require a Site Plan Agreement and that if the property was to be developed in the future for a residential subdivision that a rezoning of the site would be required which also requires that an Environmental Site Assessment be conducted of the site and that all recommendations of the Environmental Site Assess ment be followed prior to the issuance of any building permits.
- Based on the sampling results gathered by SRB on August 15, 2006, the CNSC issued a Designated Order requiring SRB to immediately cease tritium processing and to submit a detailed report describing the specific actions and measures that will be taken to prevent or reduce further direct contamination of the groundwater under the stacks.
- CNSC Staff stated that the reason for issuing the Order was that contaminated water dripping off the stacks resulted in a localized source of groundwater contamination under the stacks, which represented a mechanism that was unexpected and not well understood. This source had not been recognized and led CNSC Staff to issue the Order.
- SRB requested that the Order be revoked or amended to allow SRB to operate while an “ACTION PLAN” could be developed to address CNSC new concerns.
- The Commission rendered its decision on September 5, 2006 allowing SRB to process tritium, but not during the occurrence of any type of precipitation, including rain, drizzle, freezing drizzle, freezing hail and snow.
- The decision also required SRB to submit to the Commission for consideration by the Commission at the Day One Licensing hearing scheduled for October 25,2006, a report describing the specific actions and measures that will be taken to: identify all the sources of groundwater contamination; contain those sources of groundwater contamination; prevent or mitigate further direct contamination of the soil and groundwater under the stacks; and remediate the contaminated groundwater and an implementation plan and schedule for the actions described in the report.
- We have submitted our detailed plan to the Canadian Nuclear Safety Commission.
- Our detailed plan is available to the public and copies have been provided to CNSC staff and the City of Pembroke for review.
- The plan falls within the limits of our existing Licence for releases to the sewer system.
- The implementation of the plan if approved by the Commission will not result in a risk to the health of the community or the environment.
- SRB will be focusing on addressing the requirements of the Order in the coming weeks and months.

Effects on the Environment and the Public

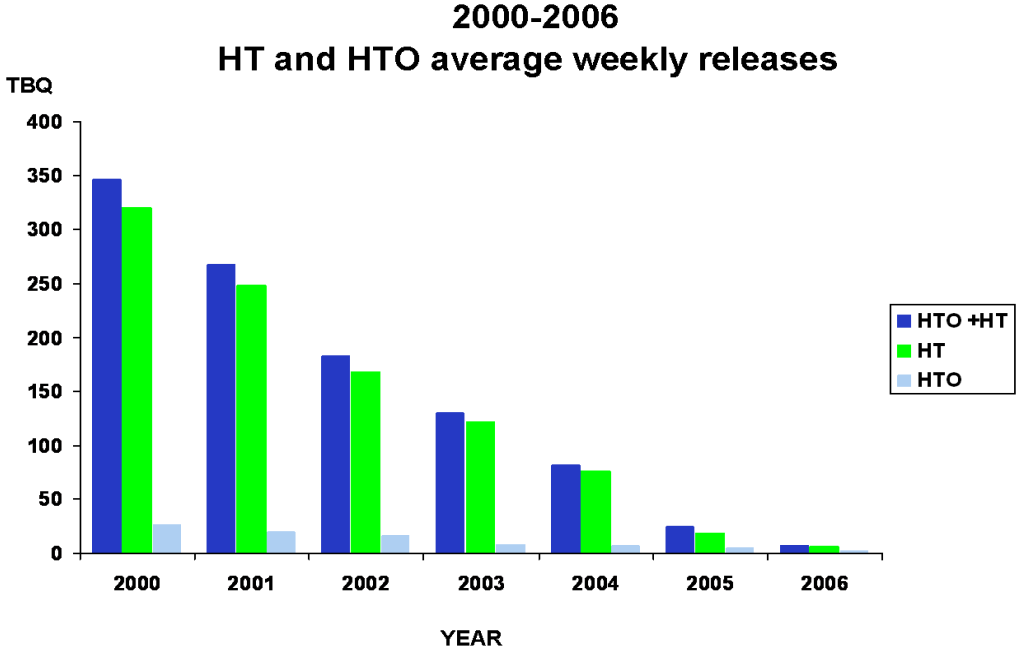
- Since SRB has been in operation, radiation doses to the public have been well below the public dose limit of 1.0 mSv/year, and have not caused an unreasonable risk to the health of the public.
- Based on monitoring results, at maximum, the dose to a child or adult due to SRB would be less than 0.2 mSv/year, a fifth of the public dose limit of 1.0 mSv/year as set by the CNSC.
- This assumes this individual:
    - resides very close to SRB
    - is breathing air due to the emissions from SRB
    - is drinking well water or formula mixed with well water
    - eats 100% of their diet from their home garden.
- Below 50 to 100 mSv, risks of health effects are either too small to be observed or nonexistent.

Emissions

- The trend in weekly total activity released in 2006 has decreased gradually from the start of the year to our last full week of operation with both HT and HTO decreasing.



- The decrease in total tritium released, indicating a 97% reduction since 2000 with drastic decreases in both HT and HTO year after year.



Public Dose in Perspective

mSv		
100.0	G	994 out of 1000 individuals exposed to 100 mSv would not develop cancer. *2* Risk of disease or death is increased by 10% among those who receive 100 mSv. *3* (G on Graph)
7.0	F	Brain Scan. *4* (F on Graph)
3.7	E	The highest dose to an SRB employee (in 2005). (E on Graph)
2.4	D	On average, public radiation exposure due to all natural sources. *4* (D on Graph)
1.0	C	CNSC annual public dose limit. (C on Graph)
0.5	B	Abdomen x-ray. *4* / The average dose to SRB employees (in 2005). (B on Graph)
0.2	A	Maximum typical annual dose to the public due to SRB. (A on Graph)

Reference Documentation

2. Health Physics Society.
3. International Agency for Research on Cancer.
4. International Atomic Energy Agency.

Improvements in the Last Year

- Upgraded the equipment used to monitor tritium emissions, the equipment was also verified by an independent consultant for accuracy.

- Improved our environmental monitoring program by expanding air monitoring array from 14 to 41 locations throughout the community, also started using an independent consultant to perform sample collection and analysis.

- Hired consultant to develop upgraded, and very conservative DRL, which will be used to calculate dose to the public once approved by the CNSC.

- With the help of an independent consultant we have developed a Fire Protection Program, and we have introduced a number of fire protection initiatives on site including the installation of a sprinkler system. Also funded additional training for the Pembroke Fire Department.

- Developed a waste management program.

- Developed a Maintenance Program.

- Updated a number of other programs:
    - Public Information Program
    - Emergency plan
    - Safety Analysis report
    - Radiation Protection Program
    - Preliminary Decommissioning plan

Inspections and Audits

- In addition to the internal audits that we perform, we are also audited on a regular basis by:
    - Canadian Nuclear Safety Commission (CNSC)
    - Ontario Ministry of the Environment (MOE)
    - Ontario Ministry of Labour
    - Pembroke Fire Department
    - Transport Canada
    - Ontario Power Generation
    - ISO 9001 Registrar (BSI Management Systems)
    - Underwriters Laboratories of Canada (ULc)
    - And by numerous customers, such as:
        - NATO Peacekeeping Troops
        - Aerospace Manufacturers
        - Environmental Consultants