

## The Tritium Trail

- The tritium trail starts with CANDU reactors. When non-radioactive heavy water is irradiated, radioactive tritium is created. Tritium is a serious workplace hazard. It is a radioactive form of hydrogen – and the principal pollutant from CANDU power plants.
- To reduce the CANDU workplace hazard, Ontario Power Generation trucks its tritium-contaminated heavy water to a special facility: the Darlington Tritium Removal Facility.
- The tritium facility began operating in 1990. Efforts were made to defray the cost by selling the tritium. This was controversial, since the main use for tritium worldwide (more than 90 % of the total) is as a nuclear explosive material in weapons programs.
- On the open market, tritium is valued at about \$25,000 (U.S.) per gram. On average, each nuclear weapon uses about 4 grams or \$100,000 worth of tritium.
- Since it began operating, the Darlington Tritium Removal Facility has produced about 2 kilograms per year, or 30 kilos of tritium altogether – enough for 7,500 nuclear weapons.
- From Darlington, the tritium is shipped to AECL's Chalk River Laboratories. AECL is equipped to handle large amounts of tritium; it re-packages the tritium into smaller containers and ships them to processors such as SRB Technologies in Pembroke.
- SRB regularly receives 2.5-g tritium consignments from AECL. It fills tubes with tritium and exports glow-in-the dark tritium-containing products all around the world.
- SRB's U.S. (Winston-Salem, North Carolina) and U.K. (Slough, Berkshire) affiliates, which no longer carry out tritium-processing operations, are major destinations. The shipments are trucked from Pembroke to Ottawa and flown from the Ottawa airport.
- SRB imports tritium-filled devices from other countries for tritium reclamation. In 1994-1995 the U.S. Dept of Energy transferred hundreds of grams of waste tritium to Pembroke from weapons facilities. No permits or shipping documents accompanied these transfers.
- SRB has a permit to import tritium from a top secret nuclear weapons facility in Russia, PA Mayak. A recent import permit, obtained through Access to Information, allows SRB to import up to 1.03 kg of waste tritium from China (copies available).
- Crushed glass wastes from SRB's reclamation activities are highly radioactive and contain large amounts of tritium. SRB ships these wastes to AECL's Chalk River Labs.
- In 2000-2005 SRB discharged more than 150 grams of tritium from its stacks during tube-filling and reclamation operations. At \$25,000 US per gram (Darlington price), this represents a spill of \$3,750,000 worth of tritium into the local environment.
- SRB also discharges waste tritium into the Pembroke sewer from where it enters the Ottawa River and the drinking water of downstream communities including Ottawa.



## THE TRITIUM TRAIL

This graphic by Robert Del Tredici shows the traffic in tritium from Canada to its many customers.

- (1) Tritium contaminated heavy water from CANDU reactors goes to the Tritium Removal Facility.
- (2) Tritium gas is sent to SRB technologies in Pembroke on the Ottawa River for manufacturing.
- (3) Self-illuminating lights (tritium gas in sealed glass tubes) are packaged & shipped to customers.
- (4) A great deal of tritium is given off into the environment at each stage: CANDU, TRF, SRB....
- (5) Disused sources (when the light dims) are sent back to SRB and are shipped to Chalk River
- (6) At Chalk River, tritium is the second largest radioactive loading in a proposed megadump.
- (7) Tritium enters the Ottawa River and flows downstream to Ottawa and then to Montreal
- (8) The shut-down NPD (Nuclear Power Demonstration) reactor is 30 km upstream from Chalk River

RESOURCES: Troubles with Tritium (CCNR): [www.ccnr.org/#tr](http://www.ccnr.org/#tr)  
 The Tritium Awareness Project (TAP): [www.tapcanada.org](http://www.tapcanada.org)

CCNR = Canadian Coalition for Nuclear Responsibility [www.ccnr.org](http://www.ccnr.org)

CCRCA = Concerned Citizens of Renfrew County and Area [www.concernedcitizens.net](http://www.concernedcitizens.net)