

Tritium leak protests prompt Canada to suspend discharges

[MONTREAL] The Canadian government has ordered a halt to the disposal of liquid waste from Atomic Energy of Canada's main nuclear research site, following protests from environmental groups provoked by details of leaks of radioactive waste water.

According to Canada's Atomic Energy Control Board (AECB), tritium levels in the leaks at Chalk River, Ontario, are well within regulatory standards and are not a danger to public health — despite the fact that some of the waste has entered the Ottawa River, whose waters are used for drinking.

The situation echoes that at Brookhaven National Laboratory, New York, whose director resigned and whose long-time contractor was sacked following tritium leaks (see *Nature* 387, 114; 1997). In both cases, government action seems to have been prompted by public concern rather than by evidence of a clear danger.

The leakage, which has taken place over a 20-year period, was from uranium fuel storage bays for the now inoperative NRX research reactor, and put thousands of litres daily into the river. Atomic Energy of Canada Ltd (AECL) made studies over the years and reported them in annual reports to the AECB but did not otherwise go public with them.

The warden (the senior elected official) of Renfrew County, where the Chalk River plant is situated, has complained that his council was never told of the leak. Others who feel the council should have been informed include Lynn Jones of nearby Pembroke, who uncovered the extent of the leak via a request filed under Canada's 'access to information' law.

AECL points out that it reported the leak in publicly available annual reports, as it was required to do, but did not want to alarm the public unnecessarily by further disclosures.

Two more leaks were revealed later, in pipes carrying water from routine drainage of reactor liquids into a gravel-filled pit on AECL property. The AECB says that the total amount of tritium in the leaks corresponds to only 0.01 per cent of the legally permissible limits on releases from the site.

Public concern about the leaks is linked to an offer by the nearby town of Deep River, which has since been dropped, to accept radioactively contaminated soil for storage at Chalk River. The soil is from a uranium processing plant near Port Hope, Ontario. Opponents of the plan questioned whether Chalk River is capable of storing the soil if it cannot adequately control its own waste.

Robert Potvin, an AECB spokesman, admits that AECL "should have been a little more open to local communities". **David Spurgeon**

Space physicists plead for extended solar missions

[WASHINGTON] Intense budget pressures are forcing a cash-strapped US National Aeronautics and Space Administration (NASA) to make the difficult decision about which of 10 current solar-terrestrial spacecraft missions should continue to operate beyond their planned lifetimes.

Among those facing possible shutdown in the next 18 months are POLAR, WIND, GEOTAIL and the European-built Solar and Heliospheric Observatory (SOHO). These form the core of the \$2.4-billion International Solar-Terrestrial Physics Program (ISTP) which is studying Sun-Earth interactions from different vantage points in the inner Solar System.

Earlier this year, NASA invited those involved in ISTP and other projects, such as Ulysses and SAMPEX, to propose plans for extended missions. Following three days of presentations last week, a panel chaired by Lennard Fisk will rank the proposals by scientific merit and report back to NASA this summer. Fisk is the former NASA science chief, and is now a space physicist at the University of Michigan.

The problem facing the panel is similar to one presented by astrophysics missions last year (see *Nature* 383, 747; 1996), namely what to do with spacecraft that overstay their budgetary welcomes. Although the ISTP network was only completed last year, NASA funds for operating the spacecraft and analysing their data will run out by the end of the 1998 fiscal year.

"In our case, the welcome was very short," says Mario Acuña, ISTP project scientist at NASA's Goddard Space Flight Center in Maryland. WIND and POLAR were granted only three years of operational life. SOHO, which was launched in December 1995, got only two years.

That was not the plan sold to the scientific community, says Glenn Mason of the University of Maryland, who heads NASA's advisory committee for 'Sun-Earth connections'. He points out that the network was originally intended to remain in full operation until the next solar maximum, which occurs around 2001.

According to Mason, Daniel Goldin, the NASA administrator, raided 'out-year' funding for mission operations and data analysis in 1994 to improve his long-term budget picture, leaving the ISTP with no money after 1998. The funds were never restored.

Acuña and his team last week presented a plan to extend missions through the solar maximum at reduced cost by updating computers, using off-the-shelf software and reducing monitoring activities. Operations

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Burning issue: SOHO, source of this ultraviolet image of the Sun, could be shut down.

teams for some of the ISTP spacecraft would be merged, and investigator teams would be scaled down and asked to compete with the rest of the scientific community for grants to analyse the spacecraft data.

Guenter Riegler of NASA's Office of Space Science says that the budget for data analysis tends to be "more resistant to shrinking" than mission operations, as it pays directly for scientists' time. Acuña says the research programme for the extended WIND, POLAR and GEOTAIL missions would cost only about \$25 million up to 2001, roughly half current levels.

But NASA's dilemma is that it cannot afford even that. Wesley Huntress, head of science at the space agency, challenged the Goddard centre, which also runs the Hubble Space Telescope and other science missions, to cut its operations costs across the board to help pay for extended missions.

But Riegler admits that even though Goddard has identified "a fair amount of money" that might be saved by squeezing parts of its operations, it is "not anywhere near" the amount needed to fund the ISTP missions to 2001.

Mason hopes that Congress will come to the rescue, and that a recent decision by the House of Representatives to add money to NASA's authorization bill specifically for data analysis will survive the budget appropriations process. Acuña says that whatever advice comes out of the latest review, "they're not going to print money".

Some scientists say that NASA's top managers, as well as politicians, also need to understand that it can take several years to get the most out of a spacecraft mission, and that simply posting data quickly on the Internet does not guarantee a high scientific yield. Careful analysis takes time and consistent funding for research, says Mason. "It's not a matter of just picking up nuggets on the beach."

Tony Reichardt