

Progress of the Tritium/C14 Working Group

Canada 



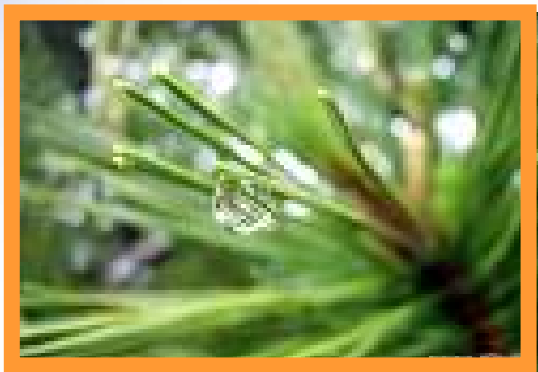


Hypothetical Scenarios

- To assess the dose consequences of acute atmospheric tritium releases
- The draft final report was reviewed
 - Most differences in predictions are now understood
 - The need for some additional information was identified
- Conclusions
 - Ingestion is the main exposure pathway
 - OBT from the air pathways is the main contributor to dose
 - The results are largely independent of whether or not it rains
 - Doses following an HT release are much lower than those following an HTO release
 - An intervention level of 10^7 Bq/kg in leafy vegetables at a downwind distance of 1 km will avoid a dose of 5 mSv
- The final report will be revised for discussion at the spring meeting



Pine Tree Scenario



A test of models that predict long-term average tritium concentrations in pine trees in the vicinity of chronic atmospheric sources

The draft final report was reviewed

The models underestimated air concentrations, perhaps because they neglect the sea breeze. The predictions are sensitive to the lateral dispersion parameter and plume rise.

The low air concentrations carried over into low predicted concentrations in pine needles and rings

The draft report will be revised for discussion at the spring meeting



Rice Scenario (C-14)

A test of models that predict steady-state C-14 concentrations in rice growing near a continuous atmospheric source of C-14

The latest results were reviewed

Predicted air concentrations differed by a factor of 3, primarily due to differences in the way lateral dispersion and plume rise were modeled



Simple specific activity models and more complex plant growth models performed equally well in predicting C-14 concentrations in rice

Modelers will supply additional information to help in understanding the results. The data will be analyzed and a draft final report produced for discussion at the spring meeting.



Mussel Scenario – Uptake

A test of models that predict the time-dependent behaviour of tritium in aquatic organisms exposed to an abrupt increase in tritium concentration

The latest results were reviewed

All models predicted (correctly) that HTO in the mussels quickly came into equilibrium with the water concentration

The models underestimated the early OBT concentrations and in general did not simulate subsequent OBT dynamics well

Modelers will supply additional information to help in understanding the results. The data will be analyzed and the draft report will be revised for discussion at the spring meeting





Mussel Scenario – Elimination

- First round results were discussed
- All models predicted that the HTO concentrations quickly came into equilibrium with the water concentrations
- OBT concentrations were underpredicted by 20-40% for the first ten days, and more severely thereafter
- New/revised results will be accepted until mid-February
- A draft report will be prepared for discussion at the spring meeting.



Pig Scenario

A test of models that predict the time-dependent behaviour of tritium in a sow subject to a contaminated diet

Second round results were discussed

Predicted HTO concentrations agreed well with observations for all models

Three models slightly overestimated OBT concentrations and a fourth underestimated by a factor of 10

New/revised results will be accepted until March

The results will be analyzed and a draft final report will be produced for discussion at the spring meeting





Potato Scenario (C-14)

A test of models that predict the time-dependent behaviour of C-14 in plants acutely exposed to elevated levels of C-14 in air

Second round results were discussed

OBT concentrations in tubers at harvest were underestimated for plants exposed at an early growth stage and overestimated at a late stage. The models performed well for exposures at intermediate stages.



New/revised results will be accepted until March 1.

Results will be analyzed and a draft final report prepared for discussion at the spring meeting



Contribution to TRS 364

- Comments on the first draft of the tritium/C14 chapter can be addressed through more explanations rather than major changes to the models
- Plant and animal categories for which parameter values will be provided were set
- It should be possible to provide models for HT, for release to soil and for irrigation
- Various WG members volunteered to find values for the parameters
- Gaps in the models and data will be identified
- A draft chapter will be produced by the end of April



Spring Meeting

May 30 – June 1 in Bucharest, Romania