



Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8610

707551

October 28, 1991

REPOSITORY OAK RIDGE OPERATIONS (ORO)
COLLECTION ENERGY PROGRAMS DIV., ER-11
BOX No. ACTIVE RECORDS GATHERED FOR HUMAN RADIATION EXP. PJT.
FOLDER _____

Mr. Paul Davis
Tennessee Department of Conservation
Division of Water Pollution Control
151 9th Avenue N, TERRA Building
Nashville, Tennessee 37219

Dear Mr. Davis:

NOTIFICATION OF PLANNED RADIOTRACER STUDY - WALKER BRANCH (WB)

The Oak Ridge National Laboratory (ORNL) research personnel plan to release small quantities of radiotracers into WB, a long-term, ecological research watershed which is located on the Oak Ridge Reservation (ORR) approximately 1.5 miles east of the ORNL main complex. The release will be part of a National Science Foundation study to determine the effect of autumn leaf fall on biological uptake and cycling of phosphorus in the stream. While this release is not a wastewater discharge and the amount of radioactivity involved is small, the Department of Energy (DOE) feels that it is prudent to notify the Tennessee Department of Environment and Conservation of the plan.

The radiotracers will include approximately 5 millicuries (mCi) of tritium and approximately 1.5 mCi of phosphorus-32 (P-32) or phosphorus-33 (P-33). These will be released into WB over a 1.5-hour period, tentatively scheduled for November 4, 1991. It is anticipated that the WB stream flow rate will be approximately 6 liters per second on that day. The release will result in temporary instream concentrations at the point of release (see Release Solution Concentration below) that are slightly above the DOE Derived Concentration Guide (DCG) levels for the two isotopes; however, at the point where WB passes beneath Bethel Valley Road and leaves the ORR, the instream concentrations will have been reduced approximately 10-fold (to levels only slightly above background) by dilution, dispersion, and biological uptake (P-32 or P-33 only). It should be noted that the half-life of P-32 is approximately 14 days and the half-life of P-33 is approximately 25 days. Thus, radioactive phosphorus taken up by aquatic organisms will decay rapidly. Because the DCGs are applicable on an annual-average basis, the temporary excursion is not considered to be problematic. The pertinent concentrations are indicated below.

<u>Isotope</u>	<u>Release Solution Concentration</u>	<u>Instream Concentration at Point of Release</u>	<u>DCG</u>
P-32 or P-33	5E-1 uCi/ml	4.7E-5 uCi/ml	2E-5 uCi/ml
Tritium	1.7 uCi/ml	1.53E-4 uCi/ml	2E-3 uCi/ml

Transport and handling of the radiotracer solutions will be conducted according to Department of Transportation regulations and ORNL radiation protection procedures. The study is also planned to include similar small-quantity releases of P-32 or P-33, propane, and salt (sodium chloride) to WB and indirectly to Northwest Tributary at later dates.

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Paul Davis

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If there are any questions or if additional information is required, please contact David Buhaly at (615) 576-9578 or Mark Belvin at (615) 576-7321.

Sincerely,



Thomas M. Jelinek
Acting Deputy Assistant Manager for Energy
Research and Development

ER-114:Belvin

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