NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 030-20681

E. I. DU PONT DE NEMOURS & CO., INC., ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT, NOTICE OF AVAILABILITY

AGENCY: Nuclear Regulatory Commission

ACTION: Environmental and Assessment and Finding of No Significant Impact for E. I. Du Pont De Nemours & Co., Inc.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is announcing the authorization of the use of carbon-14 (C-14) in field studies at the E. I. Du Pont De Nemours & Co., Inc., Stine-Haskell Research Center located in Newark, Delaware.

The NRC contact for this licensing action is Pamela J. Henderson, who may be contacted at (610) 337-6952 or by e-mail at pjh1@nrc.gov. for more information about the licensing action.

SUPPLEMENTARY INFORMATION:

NUCLEAR REGULATORY COMMISSION

License Number 07-13441-02
Docket Number 030-20681

E. I. Du Pont De Nemours & Co., Inc.
Stine-Haskell Research Center
Newark, Delaware

Environmental Assessment, Finding of No Significant Impact, and Notice of Opportunity for a Hearing

The U.S. Nuclear Regulatory Commission is considering amending E. I. Du Pont De Nemours & Co., Inc. Byproduct Materials License Number 07-13441-02 to authorize the use of carbon-14 (C-14) in field studies at the E. I. Du Pont De Nemours & Co., Inc., Stine-Haskell Research Center located in Newark, Delaware.

ENVIRONMENTAL ASSESSMENT

1.0 Introduction

1.1 Background

This environmental assessment (EA) is being prepared to identify and evaluate the environmental impacts of the proposed amendment to E. I. Du Pont De Nemours & Co., Byproduct Materials License Number 07-13441-02, to permit the use of carbon-14 (C-14) in field studies at the E. I. Du Pont De Nemours & Co., Inc., Stine-Haskell Research Center (hereafter referred to as the Center). The Center is located on Elkton Road (Route 2) in Newark, Delaware.

1.2 Proposed Action

The proposed action is to amend NRC Byproduct Materials License No. 07-13441-02, issued to E. I. Du Pont De Nemours & Co., Inc. on December 23, 1983 (as amended), to allow the performance of outdoor field studies with C-14 labeled radiochemicals having agricultural activity at the Center. The Center proposes to use a maximum of 10 millicuries (mCi) of C-14 labeled radiochemicals per year, applied to one 24.2 meters by 30.5 meters test plot. The objectives of the small-plot field studies is to identify the metabolic pathway, stability and environmental fate of agricultural chemicals and associated products following application to a given crop or the soil in which the crop is grown.

1.3 Need for the Proposed Action

In the current amendment request, the licensee proposes to perform studies at the Center similar to field studies that have been performed by similar Companies. The studies at the Center are required by the Environmental Protection Agency (EPA) in order to make regulatory decisions relative to the registration of biologically active chemicals according to the criteria set forth in the amended Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The use of radiolabeled materials is specifically required in 40 CFR 158.240 and 158.290 to

determine (1) the nature of residue in crops after treatment with a biologically active chemical and (2) the uptake of a soil-applied biologically active chemical by crops grown in the treated soil. The analytical sensitivity afforded through the use of radioisotope labels in field studies is essential for isolation and identification of metabolites present in trace amounts in complex biological matrices. In the absence of such radiolabeled molecules, it would be extremely difficult to trace, isolate, and identify a single chemical in these complex matrices. No alternatives are given in the EPA regulations.

1.4 Alternatives to the Proposed Action

As required by Section 102(2)(E) of the National Environmental Policy Act (NEPA), possible alternatives to the final action have been considered. One possible alternative to the field studies is the treatment of greenhouse-grown plants with the radiolabeled chemical. However, this alternative is not feasible because the required studies must evaluate the behavior of the agricultural chemical under normal agricultural conditions. Greenhouse studies provide an unnaturally stable environment without the normal variations in weather and other field conditions, and may lead to non-representative metabolic profiles.

Another alternative considered was the no-action alternative. Under this alternative the NRC would not grant the licensee's request to use radiolabeled C-14 compounds. As discussed below, there are minimal, if any, effects from the proposed action. Additionally, if the licensee does not perform these studies, the Environmental Protection Agency (EPA) will not consider registering the chemicals as required by FIFRA and new products will not be available in that regulated area. Therefore, the no-action alternative is not a viable alternative and is not further considered in this environmental assessment.

2.0 Affected Environment

The Center is located on Elkton Road, in Newark, Delaware. The Center is situated on a five hundred thirty five (525) acre site at approximately 39 degrees and 40 minutes north

latitude and 75 degrees and 45 minutes west longitude. Of the 525 acres, 267 acres of open fields and woodlands are in Cecil County, Maryland, with the remaining 268 acres of fields, woods and all buildings are in New Castle County, Delaware. No radiological activities will be carried out in the portion of the site located in the State of Maryland.

Currently, numerous laboratories and greenhouses are located at the site which are used for toxicology and safety testing, and research and development of agricultural products and pharmaceuticals. Agricultural fields surround theses structures and are used for testing experimental herbicides and pesticides under natural climatic conditions. The site currently employs approximately 800 personnel.

The site is bounded to the east and south by woodlands, homes, light industry, and businesses, and to the north and west by the Baltimore & Ohio Railroad tracks. Topographically, the site is at an approximate elevation of 120 feet above mean sea level, although the western portion of the site rises to an elevation of 170 feet above mean sea level.

Surface drainage patterns are controlled regionally by the Delaware River. The site lies within the drainage basin of the Christina River. At the site, surface drainage patterns are controlled by an unnamed tributary of the West branch of the Christina River, which bisects the site and flows in a southerly direction connecting with the West branch south of the property boundary. The East branch of the Christina River meanders briefly through the northeast corner of the site, flows eastwardly before turning southwardly, joins the West branch and discharges into the Delaware River. A surface-water intake located near Smalley's Pond, on the Christina River approximately 8 to 10 miles downstream of the site, is operated by the Wilmington Suburban Water Authority as a potable-water source for nearby communities.

Radiological tests will be conducted in one small test plot, 24.2 meters by 30.5 meters, surrounded by a four (4) foot high fence, located southwest of farm building 250. The location of the closest off-site human dwelling is approximately 182 meters from the test plot.

3.0 Environmental Impacts of the Proposed Action

The objectives of the small-plot outdoor field studies is to identify the metabolic pathway, stability and environmental fate of agricultural chemicals and associated products following application to a given crop or the soil in which the crop is grown. The maximum radioactivity released in one year will be 10 mCi of C-14. Using this information, impact to water supplies and the dose to the maximally exposed individual is calculated. The radiological impact from the performance of field studies with radiolabeled materials at the Center has been calculated using both the EPA's Gaussian Dispersion model, SCREEN 3, and the EPA's COMPLY model. SCREEN 3 is a computer code that employs worst case scenario parameters, including worst case meteorological conditions, to estimate potential concentrations of radionuclides at a specific receptor, the nearest off-site residence, positioned in the downwind direction from the test plot area. COMPLY is a computer code that calculates the maximum dose to an individual residing outside of the facility and considers dose from all pathways including inhalation, ingestion of contaminated food, immersion, and ground deposition to estimate the worst-case dose.

3.1 Impact on Food Chain

The plants grown in radiolabled studies will not be available for incorporation into the food chain. The test area is enclosed by a 4-foot tall chain link fence, and wire mesh or bird netting will be used to restrict bird and small rodent access to the plot. All plant material generated will be used for laboratory research purposes or disposed of as radioactive waste. Soil will be removed from the plot to a level where the soil radioactivity is at background. Removed soil will be disposed of per 10 CFR 20.2001 or in accordance with specific license conditions. Due to the precautions taken during application, the physical barriers in place to prevent wildlife access, and the removal of all soil and plant materials at the conclusion of the

study, it is reasonable to assume that the radiolabled plant material will not enter the food chain by the ingestion process.

3.2 Groundwater Impacts

The procedure for application results in a very low potential for overspray and contamination of soil. For plants in pots, a plastic bag is placed over the entire setup. The spraying is conducted through a slit in the plastic bag. For plots, plastic is wrapped around stakes, which are placed at each corner of the plot. Any drift will be contained by the plastic.

At the conclusion of the testing, all vegetation is removed and disposed. Core soil samples are taken to depths of 18" and analyzed for C-14. Soil is removed from the plot to a level where the soil radioactivity is at background.

Given the application procedures, and the soil testing at the conclusion of the test, it is not considered likely that the radiolabeled material from the plot will contaminate the groundwater.

3.3 Surface Water Runoff

An unrealistic, worst case of radioactivity released by surface runoff can be estimated based on a severe rain fall event which washes all of the applied activity from the plant and/or soil. The maximum activity used per application will be 10 mCi with no more than 10 mCi total in a year. The annual average rainfall in Newark, Delaware is 45 inches. The largest monthly rainfall from 1972 to 2000 in Newark Delaware, occurred in July 1989, and was 13.58 inches. The plot area plus the surface drainage area immediately around the plot is approximately 109 meters by 91 meters. If 13.58 inches of rain fell over the 109 by 91 meter area, a volume of 2.567×10^{8} milliliters (ml) would runoff the immediate surface area. If 100% of a 10 mCi application were lost to surface runoff during this rainfall, the activity concentration of this surface runoff would be 3×10^{-6} microcuries/milliliters (uCi/ml), below the Appendix B, Table 2, Column 2, Part 20 limits for C-14 water effluent limit of 3×10^{-5} uCi/ml. In addition, the runoff

from the area would be significantly diluted, as the complete site drainage area into the tributary is large. Since the concentration values in Appendix B, Table 2, Column 2, of Part 20 are equivalent to concentrations which, if ingested continuously over the course of year, would produce a total effective dose equivalent (TEDE) of 50 millirem or 0.5 millisieverts, and the 3×10^{-6} uCi/ml runoff from the area would be significantly diluted, the TEDE would be considerably less than 50 millirem.

3.4 Dose to the Maximally Exposed Individual

SCREEN 3 modeling was employed using the maximum amount of 10 mCi of C-14 applied in one year, and the specific activity value for C-14 of 4.5×10^{6} uCi/gram (from 10 CFR Part 71, Appendix A, Table A-1). A worst case annual concentration of 4.872×10^{-7} micrograms/cubic meter (2.19×10^{-12} uCi/ml) is estimated for an individual at the nearest off site receptor location (182 meters). The Appendix B, Table 2, Column 1, of Part 20 limit of 3×10^{-7} uCi/ml, which, if ingested continuously over the course of year, would produce a TEDE of 50 millirems or 0.5 millisieverts. Since 2.19×10^{-12} uCi/ml is a small fraction of the 10 CFR Part 20, Appendix B limit (3×10^{-7} uCi/ml), the TEDE would be considerably less than 50 millirems.

The COMPLY model was also used to evaluate dose to the general public with the assumption that 10 mCi of C-14 was released over one year, at a distance of 182 meters to the nearest residence. The COMPLY program, level 2, calculated the maximum effective whole body dose for the maximally exposed individual to be 0.045 millirem/year. This dose is a very small fraction of the 100 millirem/year dose limit for individual members of the public required by 10 CFR 20.1301.

The results of both the SCREEN 3 and COMPLY codes agree that doses will be considerably less than the dose limit for individual members of the public required by 10 CFR 20.1301.

3.5 Endangered Species

Due to the small size of the test plot (24.2 meters by 30.5 meters), the precautions taken during application, the physical barriers in place to prevent wildlife access, and the removal of all soil and plant materials at the conclusion of each study, it is considered unlikely that the proposed action would have any impact on threatened and endangered species and therefore no further consultation under Section 7 of the Endangered Species Act is required.

3.6 Historic and Cultural Resources

Due to the small size of the test plot (24.2 meters by 30.5 meters) and previous disturbances of the ground at the site of the proposed action, it is considered unlikely to have any potential effect on historic or cultural properties and therefore no further consultation under Section 106 of the National Historic Preservation Act is required.

4.0 Agencies and Persons Contacted

Letter from Allan C. Tapert, Program Administrator, Office of Radiation Control, Delaware Health and Social Services, dated July 19, 1995, to the Center. Mr. Tapert declined to review the Center's plans for field studies because the radioactive material in question is not NARM rather byproduct material.

U.S. Fish and Wildlife Service was not consulted since the licensing action involves a small plot of land and will not affect endangered or threatened species. The State Historic Preservation Officer was not consulted since there is no potential to affect historic properties.

5.0 List of Preparers

John D. Kinneman, Chief, Nuclear Materials Safety Branch 2, Division of Nuclear Materials Safety, Region I, Health Physics Review.

Pamela J. Henderson, Senior Health Physicist, Nuclear Materials Safety Branch 2, Division of Nuclear Materials Safety, Region I, Health Physics Review.

6.0 Identification of Sources Used

Draft NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," published September 2001.

Letter dated March 15, 2002, to the U.S. Nuclear Regulatory Commission, Region I; from Joseph Montovino, Facilities Manager, Stine-Haskell Research Center, DuPont Agricultural Products.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has prepared an Environmental Assessment related to the proposed action to use C-14 labeled radiochemicals in outdoor field studies and amendment of License No. 07-13441-02. On the basis of the assessment, the Commission has concluded that environmental impacts associated with the proposed action would not be significant and do not warrant the preparation of an Environmental Impact Statement. Accordingly, it has been determined that a Finding of No Significant Impact is appropriate.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," the Environmental Assessment and the documents related to this proposed action will be available electronically for public inspection from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html (the Electronic Reading Room).

OPPORTUNITY FOR A HEARING

Based on the EA and accompanying safety evaluation, NRC is preparing to issue a FONSI. The NRC hereby provides that this is a proceeding on an application for amendment of a license falling within the scope of Subpart L, "Informal Hearing Procedures for Adjudication in Materials Licensing Proceedings," of NRC's rules and practice for domestic licensing proceedings in 10 CFR Part 2. Pursuant to Section 2.1205(a), any person whose interest may be affected by this proceeding may file a request for a hearing in accordance with Section 2.1205(d). A request for a hearing must be filed within thirty (30) days of the date of publication of this Federal Register notice.

A request for hearing or petition for leave to intervene must be filed with the Office of the Secretary either:

1. By delivery to the Document Control Desk or may be delivered to the Commission's Public Document Room, 11555 Rockville Pike, Rockville, MD 20852-2738; or
2. By mail or telegram addressed to the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Attention: Rulemakings and Adjudications Staff.

Additionally, in accordance with 10 CFR Sec. 2.1205(f), each request for a hearing must also be served, by delivering it personally or by mail to:

1. The applicant, E. I. Du Pont De Nemours & Co., Inc., DuPont Agricultural Products, Stine-Haskell Research Center, Elkton Road, P.O. Box 30, Newark, Delaware, 19714-0030, ATTN: Norman W. Henry III; or
2. The NRC staff, by delivering to the Executive Director for Operations, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852, or by mail, addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

A request for hearing, filed by a person other than an applicant, must describe in detail:

1. The interest of the requester in the proceeding;
2. How that interest may be affected by the results of the proceeding, including the reasons why the requestor should be permitted a hearing, with particular reference to the factors set out in Section 2.1205(h).

3. The requester's areas of concern about the licensing activity that is the subject matter of the proceeding; and
4. The circumstances establishing that the request for a hearing is timely in accordance with Sec. 2.1205(d).

Dated at King of Prussia, Pennsylvania this 15th day of May, 2002.

Original Signed by John D. Kinneman

FOR THE NUCLEAR REGULATORY COMMISSION
John D. Kinneman
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
Region I