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UNITED STATES NUCLEAR REGULATORY COMMISSION Ared 7 Fet 88;1010 WEC REGION II 101 MARIETTA STREET, N.W. ATLANTA, GEORGIA 30323

FTR 2 3 1988

William E. Cline, Chief MEMORANDUM FOR: Nuclear Material Safety and Safeguards Branch

THRU:

ome Douglas M. Collins, Chief Emergency Preparedness and Radiological Protection Branch

> John B. Kahle, Chief Radiological Effluents and Chemistry Section

FROM:

Susan S. Adamovitz, Radiation Specialist Radiological Effluents and Chemistry Section

SUBJECT:

MEETING AT THE GEORGIA INSTITUTE OF TECHNOLOGY CONCERNING ANALYSIS OF COKE PRODUCTS

On February 9, 1988, an NRC representative met with a representative from the Georgia Institute of Technology's Environmental Resources Center concerning analysis of Coke products for Po-210. Attendance at this meeting is presented in Enclosure 1.

The Coke Company had utilized the 3-M Model 902F ionizing air guns (which contained a Po-210 radioactive source rolled and epoxied into the barrel of the gun) in several of their bottling plants. Due to potential contamination problems from the Po-210 isotope, Coke Co. representatives had contracted with the Georgia Institute of Technology for analysis of several types of their soft drinks. The Director of the Environmental Resources Center described the analytical method utilized for the Po-210 determinations. The method used was procedure 900.0, "Gross Alpha and Gross Beta Radioactivity" from the Environmental Protection Agr .y's manual, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032. Initially a twenty milliliter aliquot was taken from each soft drink sample, and evaporated to near dryness. The concentrated liquid was then transferred into a tared metal planchet and dried to a solid residue. Sugar-based cola drinks were additionally heated gently to a blue flame over a Bunsen burner. The residue weight was then recorded and the samples were counted 100 minutes for gross alpha on a Beckman Wide Beta II alpha/beta proportional counter. Using a 20 milliliter aliquot, residue weights varied from 576 to 657 mg per 20 ml liquid for sugar-based drinks and 30 to 37 mg for diet drinks. The procedure was then altered to utilize 3 milliliters of sugar-based drinks and 50 milliliters of diet drinks. This was done to maintain the residue weight below 100 milligrams in order to minimize alpha self-absorption. Based on the current analytical and counting procedures the laboratory was able to achieve a minimum detectable activity of 0.2 Bg/liter for diet drinks and 5 Bg/liter for sugar drinks.

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William E. Cline

The NRC representative noted that several different types of Coke products were being tested and aliquots were taken directly from the individual soft-drink containers. The laboratory director indicated that it was currently not known if the Po-210 was in a soluble or insoluble chemical form. The 3-M Company had supplied information that the radioactive material should be in the form of an insoluble bead.

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Susan S. Adamovitz

Enclosure: Attendance List

ENCLOSURE 1

Attendance at the NRC - Georgia Institute of Technology Meeting on February 19, 1988

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Dr. Bernd Kahn, Director, Environmental Resources Center, Georgia Institute of Technology

Susan Adamovitz, Radiation Specialist, Radiological Effluents and Chemistry Section, EPRP Branch

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