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UNITED STATES NUCLEAR REGULATORY COMMISSION

OFFICE OF PUBLIC AFFAIRS, REGION I
631 Park Avenue, King of Prussia, Pa. 19406

No. I-83-104
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NRC STAFF CONDUCTS SPECIAL INSPECTIONS TO LOOK INTO OVEREXPOSURE OF HANDS OF WORKERS AT NUCLEAR METALS, INC. OF CONCORD, MASSACHUSETTS

The Staff of the Nuclear Regulatory Commission has recently conducted a series of special inspections and has held meetings with the management of Nuclear Metals, Inc. of Concord, MA. after learning that some company workers had received higher radiation exposures of their hands than are permitted by NRC regulations.

Workers at Nuclear Metals have shown no symptoms of radiation injury to their hands. The NRC staff has retained a medical consultant to review all health-related information in this case.

The company forms metallic uranium into a variety of products used in industry and in national defense.. The uranium used by the company is left over from the manufacture of the kind of uranium used in nuclear reactor fuel. This remaining uranium, from which most of the fissionable ingredient--the isotope uranium-235--has been extracted, therefore is not usable as reactor fuel. But, because of its great weight and density it is used for such things as armor-piercing devices, radiation shielding and counterweights.

The depleted uranium emits a low level of radiation in the form of beta particles (electrons) and the radiation is not very penetrating. However, dust produced during fabrication, when in prolonged, direct contact with the skin of fingers and hands of workers, can give substantial exposures. One of the causes of the overexposures has been the accumulation of dust containing uranium on the leather gloves worn by foundry workers who operate furnaces used to melt the uranium so that it can be cast into various shapes required in product manufacture. Uranium normally undergoes some gradual radioactive decay to form other radioactive elements, and these tend to separate from the uranium when the uranium is melted in furnace in the plant.

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During a series of special inspections in May and June of this year, NRC Region I inspectors found that workers in the foundry had received exposures to their hands at rates of up to one rad (beta) per hour. Inspectors estimated that wearing contaminated gloves intermittently for about ten hours per week had given workers about 125 rem in the fourth quarter of 1982 and the first quarter of 1983. The NRC limit for exposures of the hands or feet is 18 3/4 rem per calendar quarter. Nuclear Metals is in the process of making more detailed assessments of the exposures to individual workers.

Nuclear Metals subsequently set new administrative controls on radiation exposures of its workers, including an administrative hand exposure limit of 12 1/2 rem per quarter year; more frequent replacement of contaminated foundry gloves, and closer monitoring of hand exposures by having workers wear finger rings that contain radiation-measuring devices.

The Commonwealth of Massachusetts is being kept informed of developments in this case.

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