IN THE MATTER OF: NEUTRON PRODUCTS, INC. 22301 Mt. Ephraim Road Dickerson, Maryland 20842 SERVE ON: MR. JACKSON A. RANSOHOFF PRESIDENT Neutron Products, Inc. 22301 Mt. Ephraim Road Dickerson, Maryland 20842	SECRETARY OF THE DEPARTMENT OF THE ENVIRONMENT TOXICS, ENVIRONMENTAL SCIENCE AND HEALTH 2500 Broening Highway Baltimore, Maryland 21224 License No. MD-31-025-01

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NOTICE OF MODIFICATION OF RADIOACTIVE MATERIAL LICENSE

The Maryland Department of the Environment ("Agency") hereby notifies Neutron Products, Inc. ("NPI") that Radioactive Material License MD-31-025-01 has been amended to limit the use of all radioactive isotopes to possession and storage only. This amendment also restricts access to the Limited Access Area of the NPI facility as to all employees. This action has been undertaken by the Agency in response to recent discoveries of contaminations occurring at NPI and in light of systemic deficiencies in the company's ability to monitor, detect and prevent radioactive exposures and contaminations. For the reasons set forth below, this emergency action is necessary in order to safeguard public health, safety and welfare by preventing future contaminations and the dissemination of contamination into the public domain.

G-178

AGENCY'S GROUNDS FOR MODIFICATION

WHEREAS, pursuant to the powers, duties and responsibilities vested in the Secretary of the Maryland Department of the Environment by the Environment Article, §§ 1-301, 1-404, and 8-101 through 8-601, inclusive, Annotated Code of Maryland, the Agency is charged with the responsibility of regulating sources of radiation within the State; and

WHEREAS, within the Agency, the Center for Radiological Health has the responsibility and duty to implement and enforce the statutes relating to radiation control, and the regulations promulgated thereunder and found at Code of Maryland Regulations ("COMAR") 10.14.02.01; and

WHEREAS, NPI is the holder of Maryland Radioactive Material License No. MD-31-025-01 ("License") issued by the Agency on November 25, 1975 and amended in part on January 21, 1988; and

WHEREAS, NPI, as licensee, is obligated pursuant to § 8-301 of the Environment Article, Annotated Code of Maryland and COMAR 10.14.02.01.C.31 to comply with all terms and conditions of its license; and

WHEREAS, COMAR 10.14.02.01C.50(a) provides that the terms and conditions of all licenses shall be subject to amendment, revision, or modification by reason of amendments to the Act or by reason of rules, regulations and orders issued by the Agency; and

WHEREAS, COMAR 10.14.02.01C.50(b) provides that any license may be revoked, suspended or modified, in whole or in part for violation of, or failure to observe any of the terms and conditions of the Act, or of the license, or of any rule, regulation or order of the Agency; and

WHEREAS, as detailed below, NPI has failed to observe certain terms and conditions of its license governing radiological safety procedures and has violated certain provisions of COMAR 10.14.02.01; and

WHEREAS, on February 6, (b)(6) Health Physics Technician at NPI was contaminated with Cobalt-60 while vacuuming a storage plate which was removed from the bottom of the main source pool in the Limited Access Area ("LAA") and which is used to store Cobalt-60 sources; and

WHEREAS, this contamination resulted from (b)(6) use of a dysfunctional vacuum which rendered Cobalt-60 contaminants airborne; and

WHEREAS, on that date, a hand-held frisker indicated that (b)(6) incurred Cobalt-60 contamination in the amount of five to eight thousand counts per minute; and

WHEREAS, a subsequent survey by a whole body counter conducted on February 8, 1989 at Calvert Cliffs Nuclear Power Plant using a Helguson Scientific Services monitoring device revealed the presence of Cobalt-60 in an amount of 609 nanocuries; and

WHEREAS, (b)(6) failed to conduct an initial survey which adequately evaluated the extent of the radiation hazard involved in decontaminating the storage plate in this manner, constituting a violation of COMAR 10.14.02.01D.201; and

WHEREAS, (b)(6) was not properly or adequately trained in radiation safety procedures governing the use and handling of radioactive materials in the LAA as required by COMAR 10.14.02.01J.12; and

WHEREAS, on February 8, 1989, the Agency was notified by Wayne Costley, Vice President of NPI, that (b)(6) thermo-luminescent dosimeter ("TLD") readings as processed by Eberline, Inc. were are follows:

1) Monthly Badge, January (Readings from Jan. 1 to Feb. 6, 1989): 77,275 roentgen equivalent in man ("rem") whole body exposure;

2) Quarterly Badge, January to March (Readings from Jan. 1 to Feb. 6): 75,250 rem whole body exposure; and

WHEREAS, on February 13, 1989, the Agency was informed by Wayne Marsh, Health Physics Technician, Joseph Weedon, Health Physics Technician and Dale Repp, Field Service Engineer that on or about January 18, 1989, the self reading dosimeters ("pocket dosimeters") worn by (b)(6) in the LAA were determined by NPI personnel to be off-scale, indicating that (b)(6) may have received a whole body expure in excess of permissible levels specified in COMAR 10.14.02.01D.101; and

WHEREAS, Procedure PR-001 incorporated by reference in Condition 13 of the NPI License provides that the NPI's Safety Officer must ensure that TLD badges are promptly processed as to any employee whose pocket dosimeter goes off scale in order to monitor and prevent contamination; and

WHEREAS, 56 monthly and quarterly TLDs were not processed until February 6, 1989, the date of the known contamination, constituting a violation of COMAR 10.14.02.01C.31(c) which requires licensees to comply with all terms and conditions of their license; and

WHEREAS, on February 24, 1989, the Agency received a phone call from Wayne Costley reporting that Cobalt-60 contamination was detected on several articles of clothing worn by (b)(6) and that such contamination was detected as he was exiting Rochester Gas and Electric's Ginna Nuclear Power Plant ("Ginna Station") in Ontario, New York on February 23, 1989; and

WHEREAS, the levels of Cobalt-60 contamination detected on (b)(6) at Ginna Station on that day were as follows:

ARTICLE OF CLOTHING	MEASUREMENT DEVICE	LEVEL OF CONTAMINATION
(a) Suit Trousers	15 cm^2 pancake probe	38,000 counts per minute (3 hot particles estimated)
(b) Suit Jacket	PCM-1b monitor	420 counts per minute
(c) Scarf	15 cm^2 pancake probe	2,000 - 3,000 counts per minute (1 hot particle estimated); and

WHEREAS, on February 24, 1989, while at the airport preparing to return to Maryland, (b)(6) was detained by the New York State Department of Health ("DOH") which surveyed the remainder o (b)(6) and possessions at the DOH office in Rochester; and

WHEREAS, additional Cobalt-60 contamination was detected by DOH, at the time, on two additional articles of clothing possessed by (b)(6) at the levels indicated below:

ARTICLE OF CLOTHING	MEASUREMENT DEVICE	LEVEL OF CONTAMINATION
(a) Trousers	15 cm^2 pan-cake probe	Greater than 2,000 counts per minute
(b) Shirt	15 cm^2 pan-cake probe	Greater than 2,000 counts per minute; and

WHEREAS, (b)(6) stated by letter to Wayne Costley, dated February 27, 1989 and provided to CRH pursuant to its investigation, that the origin of this contamination was presumably NPI's LAA and that almost all of the various articles of clothing involved in the contamination had been worn in the LAA on different occasions; and

WHEREAS, the portal monitor currently employed by NPI failed to detect any of this contamination; and

WHEREAS, the removal of contamination in excess of 440 disintegrations per minute ("DPM") per 100 cm^2 from the LAA violated Procedure R-1003 ("PR-1003"), § 5.2.4, incorporated by

reference in Condition 13 of the License, constituting a violation of COMAR 10.14.02.01C.31(c); and

WHEREAS, on March 1, 1989, the Agency conducted a survey of (b)(6) (b)(6) which revealed the presence of additional Cobalt-60 contamination at the levels indicated below:

ITEM	LEVEL OF CONTAMINATION
Dining Room Chair, Seat Cushion	6,300 DPM
Saab Car, Left Cushion	4,620 DPM
Gloves - Right Left	500 DPM 200 DPM
Washing Machine, Below Rinse Basin	8,400 DPM
Vacuum Cleaner Bag	2,800 DPM

WHEREAS, the removal of this contamination in excess of 440 DPM per 100 cm^2 from the LAA violated PR-1003, § 5.2.4, incorporated by reference in Condition 13 of the License, constituting a violation of COMAR 10.14.02.01C.31(c); and

WHEREAS, pursuant to an investigation conducted by CRH from May 27 to June 1, 1988, it was determined that the portal monitoring device stationed outside of the LAA lacks the sensitivity to detect Cobalt-60 contamination at levels of radioactivity of 440 DPM per 100 cm^2 as required pursuant to PR-1003 of NPI's license and COMAR 10.14.02.01C.31(c); and

WHEREAS, hand-held friskers are currently to be employed by all NPI employees, including (b)(6) in order to detect radioactive contamination; and

WHEREAS, (b)(6) has stated that he routinely fails to frisk all parts of his clothing and person because of the substantial amount of time needed to conduct such monitoring; and

WHEREAS, on a previous occasion, in May, 1988, the Agency was notified by the U.S. Nuclear Regulatory Commission's Region I Office that Cobalt-60 contamination was detected on (b)(6) as he exited the Ginna Station in Ontario, New York; and

WHEREAS, a subsequent investigation by CRH revealed the presence of Cobalt-60 contamination in (b)(6) NPI office, located in an unrestricted area of the facility and that such contamination was present in amounts exceeding the permissible limit for removal of contamination from the LAA as specified in PR-1003 of NPI's license; and

WHEREAS, in July, 1988, pursuant to the Agency's investigation, NPI agreed to physically modify the monitoring area so as to reduce the radiation levels of the monitoring area to twice background (i.e., 0.1 mR/hour) at the facility boundary and to take any other corrective steps necessary to prevent reoccurrence of the contamination; and

WHEREAS, NPI has failed to modify the monitoring area as necessary to reduce background radiation levels and has failed to install a new portal monitor as repeatedly requested by the Agency; and

WHEREAS, the Agency has previously informed NPI that their remedial efforts of employing hand-held friskers as a radiation monitoring device is an unacceptable permanent substitute for the instaLAAtion of an effective portal monitor and reconstruction of the portal monitoring area; and

WHEREAS, the accessibility and transportation of contamination by (b)(6) on at least two occasions demonstrates the potential for dissemination of Cobalt-60 contamination into the public domain; and

WHEREAS, the magnitude and severity of potential harm which may result from NPI's systemic deficiencies in monitoring detecting and preventing radioactive exposures and contaminations imperatively requires emergency action in order to safeguard public health, safety and welfare; and

WHEREAS, the public health, safety and welfare require that NPI's license be modified immediately to limit the use of the license to possession and storage of radioactive materials and to restrict access to the LAA until further notice; and

WHEREAS, pursuant to § 10-405 of the Administrative Procedure Act, State Government Article, Annotated Code of Maryland and COMAR 10.14.02.01C.50, the Agency may where the public health, safety and welfare imperatively require modify or partially suspend any license without the institution of prior proceedings and without according the licensee an opportunity to demonstrate or achieve compliance with all lawful requirements.

THEREFORE, YOU ARE HEREBY NOTIFIED that pursuant to COMAR 10.14.02.01C.50 and § 10-405 of the Administrative Procedure Act, State Government Article, Annotated Code of Maryland, NPI's license has been modified and partially suspended in the following ways:

Items A through M of the License are amended to read as follows:

a) All radioisotopes, including Cobalt-60, Cesium-137, Radium-226 or atomic numbers 3-92 will be for possession and storage only.

b) All phases of Cobalt-60 source production, calibration, and distribution are strictly prohibited.

c) All sources of any radioisotope currently located in the LAA may not be used or removed from that site.

d) Radiation sources may not be moved to or from irradiators by any means.

None of the foregoing amendments will be construed to limit or reduce safety of any licensed activity.

The foregoing amendments are effective March 3, 1989.

REQUEST FOR A HEARING

If you desire to contest the Agency's modification of this license, you may request a hearing in accordance with COMAR 26.12.02.04A and §§ 10-201 through 10-217 of the Administrative

Procedure Act, State Government Article, Annotated Code of Maryland, by filing within ten days of service of this Notice a Notice of Request for Hearing, with the Maryland Department of the Environment Chief Hearing Examiner, 2500 Broening Highway, Baltimore, Maryland 21224, with a copy to Mr. Carl Trump, Jr., Maryland Department of the Environment Center for Radiological Health, at the same address.

A Notice of Request for Hearing shall contain any grounds upon which you contend that the Agency's modification is unlawful, unreasonable, or unnecessary for the protection of public health and safety. If a Request for Hearing is submitted, you will be advised in writing of the time, date and place set for said hearing.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

3/3/89
Dated

Katherine P. Farrell, M.D.,
Assistant Secretary for Toxics, Environmental Science and Health

Approved as to form and legal sufficiency on this 3rd day of March, 1989.

Michael C. Powell
Assistant Attorney General

State of Maryland

DEPARTMENT OF THE ENVIRONMENT
ASSISTANT SECRETARIAT FOR
TOXICS, ENVIRONMENTAL SCIENCE AND HEALTH

CENTER FOR RADIOLOGICAL HEALTH

RADIOACTIVE MATERIAL LICENSE

Supplementary Sheet

License No. MD-31-025-01	Amendment No. 33

Neutron Products, Inc.
22301 Mt. Ephraim Road
P.O. Box 68
Dickerson, Maryland 20842

Pursuant to Section A.7 of COMAR 26.14.02.01, Condition 13 is hereby amended to add:

A. A gas Proportional Portal Monitor equivalent to the Eberline PCM-1b capable of detecting 2500 dpm at one inch and 5000 dpm at three inches shall be utilized in a location approved by the Department. The monitor shall be used by all personnel who exit the Limited Access Area ("LAA"). They shall remain standing in the sensitive detection zone of the monitor for at least two full minutes. Each person shall expose his/her back, front, right and left sides to the detectors for thirty seconds each. The monitor shall be maintained and used in accordance with the manufacturer's specifications at all times. At a minimum, this monitor shall be inspected by the manufacturer in accordance with the terms of its Service Contract and a copy of the service record shall be submitted to the Center for Radiological Health (CRH). The monitor shall be maintained and used in such a manner as to ensure its ability to accurately detect levels of radioactivity of 2500 dpm on the hands and 5000 dpm on the whole body. The monitor must be fully operational and kept free from contamination at all times unless unforeseeable and unavoidable operational problems arise. The Department must be notified by telephone within one workday in the event that the portal monitor is not operational. A contingency plan describing personnel monitoring procedures for use during downtime must be submitted to the Department for review and approval prior to resuming activities in the LAA. By June 12, 1989 the portal monitor must be located in the newly constructed access and egress area as identified in Attachment 7 to plans submitted by licensee on April 21, 1989.

B. Background radiation levels at the portal monitor shall not exceed 50 micro/R per hour unless otherwise authorized by the Department.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date _____

ADMINISTRATOR, CENTER FOR RADIOLOGICAL HEALTH

Encl 3

State of Maryland

DEPARTMENT OF THE ENVIRONMENT
ASSISTANT SECRETARIAT FOR
TOXICS, ENVIRONMENTAL SCIENCE AND HEALTH

CENTER FOR RADIOLOGICAL HEALTH

RADIOACTIVE MATERIAL LICENSE

Supplementary Sheet

License No. MD-31-025-01	Amendment No. 33

CONT'D

C. A Health Physics Consultant shall be retained by the licensee. This Consultant shall be retained subject to the approval of the Department concerning qualifications and shall perform the following functions:

1. Perform an initial independent evaluation sufficient to satisfy the Department regarding the current radiological health program employed by licensee. Thereafter and for a six-month period commencing upon hiring, submit monthly evaluations to the Department regarding the health physics/radiation safety status of the facility as it relates to ongoing and future operations under this license. Such evaluations shall include:

   a. Contamination Control Procedures and Methods;

   b. Respiratory Protection Program;

   c. Personnel Monitoring for Internal and External Radiation Exposure;

   d. Radiological Effluent Monitoring and Control for Liquid and Particulate Releases From the Facility;

   e. Adequacy of Air Handling Systems in the Production Areas;

   f. Control and Identification of Radiation and High Radiation Areas, and Contaminated Equipment and Facilities;

   g. Radiological Waste Handling, Processing and Disposition (Storage and Shipment);

   h. Hot Cell Decontamination Methods and Procedures;

   i. Personnel Training and Qualification; and

   j. Management Oversight and Control of Radiological Activities.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date _____

ADMINISTRATOR, CENTER FOR RADIOLOGICAL HEALTH