



**Wisconsin  
Electric**  
POWER COMPANY

Point Beach Nuclear Plant  
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PBL 96-0089

April 11, 1996

Document Control Desk  
U.S. NUCLEAR REGULATORY COMMISSION  
Mail Station P1-137  
Washington, DC 20555

Gentlemen:

DOCKET NOS. 50-266 & 50-301  
EMERGENCY PLAN IMPLEMENTING PROCEDURES  
POINT BEACH NUCLEAR PLANT, UNITS 1 & 2

Enclosed are copies of revised procedures to the Point Beach Nuclear Plant Emergency Plan Implementing Procedures Manual. The Procedures consist of changes which should be filed in your copies of the subject document in accordance with the attached instructions.

Please note that the procedures containing names and telephone numbers are stamped "NR ONLY, NOT FOR PUBLIC DISCLOSURE." A copy of the affected procedures, with names and numbers deleted, are provided and stamped "NAMES AND TELEPHONE NUMBERS DELETED" to assure confidentiality and facilitate your distribution to the public documents rooms.

Sincerely,

G. J. Maxfield  
Manager

kmt

Enclosure

cc: NRC Resident Inspector (w/o/e)  
Incident Response Center, Region III

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PDR ADOCK 05000266  
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Change: NOAC  
NRC PDR

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## RADIOIODINE BLOCKING AND THYROID DOSE ACCOUNTING

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### 1.0 GENERAL

Potassium iodide, a stable iodine, saturates the iodine receptors in the thyroid gland, preventing unnecessary thyroid gland exposure from radioiodine.

### 2.0 REFERENCES

- 2.1 Letter Erwin S. Huston, M.D., dated November 6, 1980, and attachment "Protection Against Radioactive Iodines."
- 2.2 NRC Information Notice No. 88-15: "Availability of U.S. Food and Drug Administration (FDA)-Approved Potassium Iodide for Use in Emergencies Involving Radioactive Iodine," April 18, 1988.
- 2.3 NUREG-1210, "Public Protective Actions - Predetermined Criteria and Initial Actions," Volume 4, "Pilot Program: NRC Severe Reactor Accident Incident Response Training Manual," February 1987.
- 2.4 Memo NPM 91-0273, "Potassium Iodide - Issuance Dose Level", dated February 7, 1991.

### 3.0 PRECAUTIONS

- 3.1 Potassium iodide will only be administered to personnel as approved by Company Medical Services personnel consistent with this procedure.
- 3.2 The use of potassium iodide will be authorized by the Health Physics director and/or the rad/con waste manager.
- 3.3 To be effective, potassium iodide must be taken within 1 to 2 hours after exposure to radioiodine. If potassium iodide is administered more than 4 hours after an individual has suffered an acute ingestion or inhalation of radioiodine, its effectiveness as a thyroid blocking agent is less than 50 percent.
- 3.4 After an initial dose (one tablet) of potassium iodide has been administered, its continued use on a daily basis will be determined by Company Medical Services personnel, or by a designated physician.
- 3.5 Rosters of WE and security personnel approved to use potassium iodide as a blocking agent will be maintained at the operations support center, site boundary control center, and the control room. Personnel not authorized to take potassium iodide are marked "NOT APPROVED" on the appropriate roster.

NAMES AND  
TELEPHONE NUMBERS  
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## RADIOIODINE BLOCKING AND THYROID DOSE ACCOUNTING

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3.6 A copy of the pharmaceutical company instructions for the use of potassium iodide tablets is reproduced on Attachment A to this procedure. This is furnished for information only.

### 4.0 STORAGE LOCATION

Single dose 130 mg tablets of potassium iodide will be stored in the emergency lockers located at the operations support center, site boundary control center, and the control room. The shelf life of potassium iodide tablets are as indicated on the pharmaceutical container.

### 5.0 ADMINISTRATION

In the event of an emergency, potassium iodide will be administered to authorized personnel if the projected dose to the thyroid is likely to exceed 25 rem.

If the projected dose to the thyroid is not likely to exceed 25 rem, the issuance of potassium iodide (to authorized personnel) is at the discretion of the Health Physics director and/or the rad/con waste manager.

### 6.0 THYROID DOSE CALCULATIONS

The dose to the thyroid from airborne concentrations of radioiodine may be calculated as follows.

#### 6.1 Inhaled Conversion Factors, rads/ $\mu$ Ci:

I-131	1.480 rads/ $\mu$ Ci
I-132	0.054 rads/ $\mu$ Ci
I-133	0.400 rads/ $\mu$ Ci
I-134	0.025 rads/ $\mu$ Ci
I-135	0.124 rads/ $\mu$ Ci

#### 6.2 Breathing Rates

6.2.1 Assume 1.25E06 cc/hour (= 3.47E-04 m<sup>3</sup>/sec.) for short exposure times or exposures while working.

6.2.2 Assume 8.35E05 cc/hour (= 2.32E-04 m<sup>3</sup>/sec.) for long exposure times (in excess of a single day).

6.3 If the concentration of each iodine isotope is not known, conservatively use the dose factor for I-131, given above, as illustrated in the example in Step 6.5.



## RADIOIODINE BLOCKING AND THYROID DOSE ACCOUNTING

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6.4 The total amount of radioiodine inhaled in  $\mu\text{Ci}$  is calculated by multiplying the average airborne concentration in  $\mu\text{Ci}/\text{cc}$  by the breathing rate in  $\text{cc}/\text{hour}$  by the total time of exposure in hours. The thyroid dose in rads is then calculated by multiplying the total amount in  $\mu\text{Ci}$  by  $\text{rads}/\mu\text{Ci}$  in the above table.

### 6.5 Example

Gross Iodine =  $5.4\text{E}-07 \mu\text{Ci}/\text{cc}$  in air

Breathing Rate =  $1.25\text{E}06 \text{cc}/\text{hour}$

Expected Exposure Time = 1 hour

I-131  $\text{rads}/\mu\text{Ci}$  = 1.48

Calculation:

$(5.4\text{E}-07 \mu\text{Ci}/\text{cc}) (1.25\text{E}06 \text{cc}/\text{hour}) (1.48 \text{rads}/\mu\text{Ci}) (1 \text{ hour})$

= 0.999 rads Thyroid Dose

## 7.0 DOSE ACCOUNTABILITY FOR EXPOSURES TO AIRBORNE RADIOIODINE

7.1 It is imperative that accurate exposure times and radioiodine concentrations encountered be maintained for each individual's exposure to an airborne radioiodine environment for dose calculation purposes.

7.2 The following minimum information should be documented for each exposure.

7.2.1 Date and time

7.2.2 Names of individuals involved

7.2.3 Duration of exposure

7.2.4 Concentrations of airborne radioiodine

7.2.5 Reference to specific analysis by sample number or manner in which concentration of airborne radioiodine was derived.



RADIOIODINE BLOCKING AND THYROID DOSE  
ACCOUNTING

ATTACHMENT A

This attachment is furnished for information only. The administration of potassium will be as stated in Procedure EPIP 5.2.

Patient Package Insert For

**THYRO-BLOCK®**  
TABLETS  
(POTASSIUM IODIDE TABLETS, USP)  
(pronounced *pos-TASS-e-um EYE-oh-dyed*)  
(abbreviated: KI)

TAKE POTASSIUM IODIDE ONLY WHEN PUBLIC HEALTH OFFICIALS TELL YOU. IN A RADIATION EMERGENCY, RADIOACTIVE IODINE COULD BE RELEASED INTO THE AIR. POTASSIUM IODIDE (A FORM OF IODINE) CAN HELP PROTECT YOU.

IF YOU ARE TOLD TO TAKE THIS MEDICINE, TAKE IT ONE TIME EVERY 24 HOURS. DO NOT TAKE IT MORE OFTEN. MORE WILL NOT HELP YOU AND MAY INCREASE THE RISK OF SIDE EFFECTS. **DO NOT TAKE THIS DRUG IF YOU KNOW YOU ARE ALLERGIC TO IODINE.** (SEE SIDE EFFECTS BELOW.)

**INDICATIONS**

THYROID BLOCKING IN A RADIATION EMERGENCY ONLY.

**DIRECTIONS FOR USE**

Use only as directed by State or local public health authorities in the event of a radiation emergency.

**DOSE**

Tablets: **ADULTS AND CHILDREN 1 YEAR OF AGE OR OLDER** One (1) tablet once a day. Crush for small children.  
**BABIES UNDER 1 YEAR OF AGE.** One-half (1/2) tablet once a day. Crush first.

Take for 10 days unless directed otherwise by State or local public health authorities.

Store at controlled room temperature between 15° and 30°C (59° to 86°F). Keep container tightly closed and protect from light.

**WARNING**

*Potassium iodide should not be used by people allergic to iodide.* Keep out of the reach of children. In case of overdose or allergic reaction, contact a physician or the public health authority.

**DESCRIPTION**

Each white, round, scored, monogrammed THYRO-BLOCK® TABLET contains 130 mg of potassium iodide. Other ingredients: magnesium stearate, microcrystalline cellulose, silica gel, and sodium thiosulfate.

**HOW POTASSIUM IODIDE WORKS**

Certain forms of iodine help your thyroid gland work right. Most people get the iodine they need from foods, like iodized salt or fish. The thyroid can "store" or hold only a certain amount of iodine.

In a radiation emergency, radioactive iodine may be released in the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably not show itself for years. Children are most likely to have thyroid damage.

If you take potassium iodide, it will fill up your thyroid gland. This reduces the chance that harmful radioactive iodine will enter the thyroid gland.

**WHO SHOULD NOT TAKE POTASSIUM IODIDE**

The only people who should not take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or antithyroid drug). Pregnant and nursing women and babies and children may also take this drug.

**HOW AND WHEN TO TAKE POTASSIUM IODIDE**

Potassium iodide should be taken as soon as possible after public health officials tell you. You should take one dose every 24 hours. More will not help you because the thyroid can "hold" only limited amounts of iodine. Larger doses will increase the risk of side effects. You will probably be told not to take the drug for more than 10 days.

**SIDE EFFECTS**

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will be taking the drug.

Possible side effects include skin rashes, swelling of the salivary glands, and "iodism" (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhea).

A few people have an allergic reaction with more serious symptoms. These could be fever and joint pains, or swelling of parts of the face and body and at times severe shortness of breath requiring immediate medical attention.

Taking iodide may rarely cause overactivity of the thyroid gland, underactivity of the thyroid gland, or enlargement of the thyroid gland (goiter).

**WHAT TO DO IF SIDE EFFECTS OCCUR**

If the side effects are severe or if you have an allergic reaction, stop taking potassium iodide. Then, if possible, call a doctor or public health authority for instructions.

**HOW SUPPLIED**

THYRO-BLOCK® TABLETS (Potassium Iodide Tablets, USP) are white, round tablets, one side scored, other side debossed 472 WALLACE, each containing 130 mg potassium iodide. Available in bottles of 14 tablets (NDC 0037-0472-20).

WALLACE LABORATORIES  
Division of  
CARTER-WALLACE, INC  
Cranbury, New Jersey 08512

IN-0472-03

Rev. 5/94