

ATTACHMENT 11.1

Copy of

Offsite Dose Calculation Manual (ODCM)

UNT-005-014, Revision 6, Change 3

REQUEST/APPROVAL PAGE

SAFETY RELATED

Required Review Level (check one)



PORC



QUALIFIED REVIEWER

PROCEDURE NUMBER: UNT-005-014REVISION: 6CHANGE: 3TITLE: Offsite Dose Calculation ManualEFFECTIVE DATE/MILESTONE: N/A

(N/A If Same as Approval Date)

PROCEDURE OWNER: Chemistry Superintendent

(Position Title)

PREPARER (Print Name / Initial):

Ken Embury/hDATE: 8/19/2000

ACTION:



New Procedure



Deletion



Revision



Change

INFORMATION ONLYEC? ☐

(Applicable LI-101 Step Numbers)



Deviation

Expiration Date/Milestone:



Temporary Procedure

Applicable Conditions:

DESCRIPTION AND JUSTIFICATION OF CHANGE:

- 1) Added flow path for Dry Cooling Tower Sumps to Circulating Water due to plant design change DC-3521 which allows flow via this path.
- 2) Added a note to the Main Condenser Evacuation System Automatic Isolation valves indicating that the Auto Divert feature of these valves has been disabled due to a plant modification and fixed a typographical on the same attachment (loacl -> local).
(ER-99-3550-00-00)
- 3) Removed milk location MKR-50 due to batch mixing of several sources of milk at the dairy prior to sample collection. Added Christine Herring's dairy as the new control milk location (MKR-40).

☐ Request/Approval Page Continuation Sheet(s) attached.

EC SUPERVISOR

APPROVAL:

N/A

DATE:

50.59 REVIEWER

Required? ☒

REVIEW:

Ch. Daise

DATE:

9/18/00

50.54 REVIEWER

Required? ☒

REVIEW:

Ch. Daise

DATE:

9/6/00

TECHNICAL REVIEWER

REVIEW:

Ch. Daise

DATE:

9/18/00Change Notice (CN)? ☐

CHANGE NOTICE (CN) SUPERVISOR

APPROVAL:

N/A

DATE:

CHANGE NOTICE (CN) ON-SHIFT SS/CRS

APPROVAL:

N/A

DATE:

Final Approval Due By:

QUALIFIED REVIEWER

Required? ☐

REVIEW:

N/A

DATE:

GROUP/DEPT. HEAD

REVIEW ☒ or APPROVAL ☐Ch. Daise

DATE:

9-19-00

GM, PLANT OPERATIONS

REVIEW ☐ or APPROVAL ☒see PORC cover sheet

DATE:

VICE PRESIDENT, OPERATIONS

APPROVAL:

N/A

DATE:

N/A**INFORMATION ONLY**CONTROLLED
MSB

PORC REVIEW AND APPROVAL SHEET			
REVIEW OF <u>UNT-005-014, Offsite Dose Calculation Manual, Rev. 6 Change 3</u>			
The PORC has reviewed this item and determined that a Safety/Commitment Review was Performed (if applicable), that a Safety Evaluation was performed (if applicable), that an Unreviewed safety question does not exist, and that nuclear safety is/was not adversely affected, and that a Technical Specification Change is or is not required.			
PORC MEMBER	MEMBER SIGNATURE	RECOMMENDED FOR APPROVAL	
		YES	NO
Maintenance	<i>[Signature]</i>	<input checked="" type="checkbox"/>	
Operations	<i>[Signature]</i>	<input checked="" type="checkbox"/>	
Radiation Protection	<i>[Signature]</i>	<input checked="" type="checkbox"/>	
Quality	<i>[Signature]</i>	<input checked="" type="checkbox"/>	
Plant Engineering	<i>[Signature]</i>	<input checked="" type="checkbox"/>	
Design Engineering			
Other			
Other			

Meeting No. 00-051

Item No. VI-A

Date: 10/11/00

This item is recommended for approval?

☒ YES ☐ NO

This item requires SRC/NRC review prior to implementation?

☐ YES ☒ NO

If yes, ensure documentation supporting review is attached.

10CFR50.59 EVALUATION ATTACHED []

Credit taken for existing 10CFR50.59
Screening or Evaluation []

	SIGNATURE	RECOMMENDED FOR APPROVAL		DATE
		YES	NO	
PORC Chairman	<i>[Signature]</i>	<input checked="" type="checkbox"/>		<u>10/12/2000</u>

Comments: _____

Approved by *[Signature]* Date 10-12-2000
General Manager Plant Operations

REQUEST/APPROVAL PAGE

SAFETY RELATED

Required Review Level (check one)



PORC



QUALIFIED REVIEWER

PROCEDURE NUMBER: UNT-005-014REVISION: 6CHANGE: 2TITLE: Offsite Dose Calculation Manual

EFFECTIVE DATE/MILESTONE: _____

(N/A If Same as Approval Date)

PROCEDURE OWNER: Chemistry Superintendent

(Position Title)

PREPARER (Print Name / Initial): Kenneth Embury /DATE: 1/26/00

ACTION:



New Procedure



Deletion



Revision



Change

EC? ☒5.3.4.j

(Applicable LI-101 Step Numbers)



Deviation

Expiration Date/Milestone: _____



Temporary Procedure

Applicable Conditions: _____

DESCRIPTION AND JUSTIFICATION OF CHANGE:

Corrected dose factors listed on Attachment 7.4 for exposure to a semi-infinite cloud of noble gases. These numbers are derived directly from Regulatory Guide 1.109 and multiplied by 1E6 as stated on the attachment. This change implements corrections to the dose factors that were not multiplied by this factor correctly.

☐ Request/Approval Page Continuation Sheet(s) attached.

EC SUPERVISOR

APPROVAL: *Lib Berger*DATE: 1-28-00

50.59 REVIEWER

Required? ☐REVIEW: N/A

DATE: _____

50.54 REVIEWER

Required? ☐REVIEW: N/A

DATE: _____

TECHNICAL REVIEWER

REVIEW: N/A

DATE: _____

Change Notice (CN)? ☐

CHANGE NOTICE (CN) SUPERVISOR

APPROVAL: N/A

DATE: _____

CHANGE NOTICE (CN) ON-SHIFT SS/CRS

APPROVAL: N/A

DATE: _____

Final Approval Due By: _____

QUALIFIED REVIEWER

Required? ☐REVIEW: N/A

DATE: _____

GROUP/DEPT. HEAD

REVIEW ☐ or APPROVAL ☐N/A

DATE: _____

GM, PLANT OPERATIONS

REVIEW ☐ or APPROVAL ☐N/A

DATE: _____

VICE PRESIDENT, OPERATIONS

APPROVAL: N/A

DATE: _____

CONTROLLED

COPY No. 0058

SAFETY RELATED

Required Review Level (check one)

☒
☐

PORC

QUALIFIED REVIEWER

PROCEDURE NUMBER: UNT-005-014REVISION: 6CHANGE: 1TITLE: Offsite Dose Calculation ManualEFFECTIVE DATE/MILESTONE: N/A

(N/A If Same as Approval Date)

PROCEDURE OWNER: Chemistry Superintendent

(Position Title)

PREPARER (Print Name / Initial): Ann Dubois / audDATE: 10-21-99

ACTION:

☐ New Procedure☐ Deletion☐ Revision☒ ChangeEC? ☐

(Applicable LI-101 Step Numbers)

☐ Deviation

Expiration Date/Milestone: _____

☐ Temporary Procedure

Applicable Conditions: _____

DESCRIPTION AND JUSTIFICATION OF CHANGE:

Revised REMP sample location descriptions K-1, M-1, Q-5, GWK-1 and SHWK-1 on attachment 7.14. Corrected sector direction for sample location SWR-1 on attachment 7.14. Removed milk location MKQ-45 due to dairy going out of business and added milk location MKR-50. Added a control broad leaf sample location in sector E to meet TRM requirements. Revised attachment 7.13, 7.14 and 7.18 to remove MKQ-45 and include MKR-50 and BLE-20.

☐ Request/Approval Page Continuation Sheet(s) attached.

EC SUPERVISOR

APPROVAL: N/A

DATE: _____

50.59 REVIEWER

Required? ☒REVIEW: [Signature]DATE: 12-2-99

50.54 REVIEWER

Required? ☐REVIEW: N/A

DATE: _____

TECHNICAL REVIEWER

REVIEW: [Signature]DATE: 11/21/99Change Notice (CN)? ☐

CHANGE NOTICE (CN) SUPERVISOR

APPROVAL: N/A

DATE: _____

CHANGE NOTICE (CN) ON-SHIFT SS/CRS

APPROVAL: N/A

DATE: _____

Final Approval Due By: _____

QUALIFIED REVIEWER

Required? ☐REVIEW: N/A

DATE: _____

GROUP/DEPT. HEAD

REVIEW ☒ or APPROVAL ☐[Signature]DATE: 12-8-99

GM, PLANT OPERATIONS

REVIEW ☐ or APPROVAL ☒*DATE: *

VICE PRESIDENT, OPERATIONS

APPROVAL: N/A

DATE: _____

CONTROLLED

* See PORC cover sheet

COPY No. MSB

**PORC
REVIEW AND APPROVAL SHEET**

Dose 12-27-99

REVIEW OF: UNT-005-014, Offsite Dose Calculation Manual, Rev. 6 Change 1

The PORC has reviewed this item and determined that a Safety/Commitment Review was Performed (if applicable), that a Safety Evaluation was performed (if applicable), that an Unreviewed safety question does not exist, and that nuclear safety is/was not adversely affected, and that a Technical Specification Change is or is not required.

PORC MEMBER	MEMBER SIGNATURE	RECOMMENDED FOR APPROVAL	
		YES	NO
Maintenance	<i>[Signature]</i>	✓	
Operations	<i>[Signature]</i>	✓	
Radiation Protection	<i>[Signature]</i>	✓	
Quality	<i>[Signature]</i>	✓	
Plant Engineering	<i>[Signature]</i>	✓	
Design Engineering			
Other			
Other			

Meeting No. 99-069

Item No. VI-B

Date: 12/15/99

This item is recommended for approval?

☒ YES ☐ NO

This item requires SRC/NRC review prior to implementation?

☐ YES ☒ NO

If yes, ensure documentation supporting review is attached.

10CFR50.59 EVALUATION ATTACHED []

Credit taken for existing 10CFR50.59
Screening or Evaluation []

	SIGNATURE	RECOMMENDED FOR APPROVAL		DATE
		YES	NO	
PORC Chairman	<i>[Signature]</i>	✓		<i>12/16/99</i>

Comments: _____

Approved by

[Signature]

Date 12/16/99

General Manager Plant Operations

UNT-001-004 Revision 15

Attachment 6.1 (1 of 1)

REQUEST/APPROVAL PAGE

SAFETY RELATED

Required Review Level (check one)



PORC



QUALIFIED REVIEWER

PROCEDURE NUMBER: UNT-005-014REVISION: 6CHANGE: 0TITLE: Offsite Dose Calculation Manual

EFFECTIVE DATE/MILESTONE: _____

(N/A if Same as Approval Date)

PROCEDURE OWNER: Chemistry Superintendent

(Position Title)

PREPARER (Print Name / Initial): JT Williams 1 Chem Tech DATE: 12/29/98

ACTION:



New Procedure



Deletion



Revision



Change

EC? ☐

(Applicable W2.302 Step Numbers)



Deviation

Expiration Date/Milestone: N/A

Temporary Procedure

Applicable Conditions: N/A

DESCRIPTION AND JUSTIFICATION OF CHANGE:

The technical requirement specifications for the radiological effluents and the radiological environmental monitoring programs that are listed in the Waterford 3 Technical Requirements Manual (TRM) are removed from the ODCM by this revision. The definition of the ODCM has been expanded to include the sections of the TRM that are applicable to radioactive effluents and the radiological environmental monitoring program as part of the ODCM. These changes will prevent the need to make the same changes to two separate procedures.

Nuclides that were not previously included in the ODCM have been incorporated in this revision. Dose factors for these nuclides have been calculated and will be used to determine doses due to liquid and gaseous radioactive effluents. The drinking water pathway has been eliminated for the radioactive liquid effluent pathway via the 40 Arpent canal.

Converted the ODCM to the new procedure format. *Revision bars not used due to extensiveness of revision. 7*

☐ Request/Approval Page Continuation Sheet(s) attached.

EC SUPERVISOR

APPROVAL: N/ADATE: N/A

50.59 REVIEWER

Required? ☒REVIEW: GREGORY L. HOOD / Greg J. HoodDATE: 1/28/99

50.54 REVIEWER

Required? ☐REVIEW: N/ADATE: N/A

TECHNICAL REVIEWER

REVIEW: GREGORY L. HOOD / Greg J. HoodDATE: 1/28/99Change Notice (CN)? ☐

CHANGE NOTICE (CN) SUPERVISOR

APPROVAL: N/ADATE: N/A

CHANGE NOTICE (CN) ON-SHIFT SS/CRS

APPROVAL: N/ADATE: N/AFinal Approval Due By: N/A

QUALIFIED REVIEWER

Required? ☐REVIEW: N/ADATE: N/A

GROUP/DEPT. HEAD

REVIEW ☒ or APPROVAL ☐A. BurgerDATE: 2-2-99

GM, PLANT OPERATIONS

REVIEW ☐ or APPROVAL ☒*DATE: *

VICE PRESIDENT, OPERATIONS

APPROVAL: _____

DATE: _____

* See PORC Worksheet

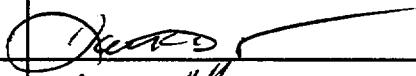
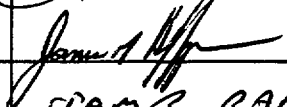


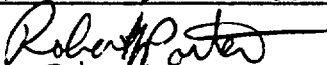
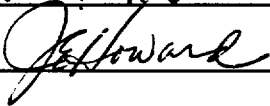
MSB

Attachment 7.1 (Page 1 of 3)

**PORC
REVIEW AND APPROVAL SHEET**

REVIEW OF: UNT-005-014, Offsite Dose Calculation Manual (Rev. 6) (Ch 0)

The PORC has reviewed this item and determined that a Safety/Commitment Review was performed (if applicable), that a Safety Evaluation was performed (if applicable), that an unreviewed safety question does not exist, and that nuclear safety is/was not adversely affected, and that a Technical Specification Change is or is not required.

PORC MEMBER	MEMBER SIGNATURE	RECOMMENDED FOR APPROVAL	
		YES	NO
Maintenance		✓	
Operations		✓	
Radiation Protection	 DARR RAMZY	✓	
Quality	 Barbara D. Mansi	✓	
Plant Engineering	 Robert Porter	✓	
Design Engineering	 Jeff Howard	✓	
Other			
Other			

Meeting No. 99-006

Item No. VI-C

Date: 2/10/99

This item is recommended for approval?

☒ YES ☐ NO

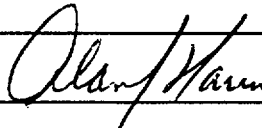
This item requires SRC/NRC review prior to implementation?

☐ YES ☒ NO

If yes, ensure documentation supporting review is attached.

10CFR50.59 EVALUATION ATTACHED []

Credit taken for existing 10CFR50.59
Screening or Evaluation []

	SIGNATURE	RECOMMENDED FOR APPROVAL		DATE
		YES	NO	
PORC Chairman		✓		2-11-99

Comments: _____

Approved by  Date 2-15-99

General Manager Plant Operations

TABLE OF CONTENTS

1.0 PURPOSE	3
2.0 REFERENCES	4
3.0 DEFINITIONS	6
4.0 RESPONSIBILITIES	8
5.0 PROCEDURE	9
5.1 SITE CHARACTERISTICS	9
5.2 SPECIFICATIONS AND SURVEILLANCE REQUIREMENTS	10
5.3 LIQUID EFFLUENTS	11
5.4 GASEOUS EFFLUENTS	21
5.5 40 CFR190 DOSE EVALUATION	37
5.6 LIQUID AND GASEOUS RADWASTE PROCESSES	38
5.7 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS	39
5.8 ROUTINE EFFLUENT RELEASE REPORTS	42
5.9 SPECIAL EFFLUENT REPORTS	52
5.10 SECONDARY RELEASE PATHS	55
6.0 RECORDS	56
7.0 ATTACHMENTS	56
7.1 BOUNDARIES FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS	57
7.2 HISTORICAL AVERAGE DISPERSION AND DEPOSITION PARAMETERS FOR AREAS AT OR BEYOND THE UNRESTRICTED AREA BOUNDARY	58
7.3 SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A) FOR INDIVIDUAL NUCLIDES	59
7.4 DOSE FACTORS FOR EXPOSURE TO A SEMI-INFINITE CLOUD OF NOBLE GASES	71
7.5 INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i	72
7.6 GROUND - PLANE DEPOSITION PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i	96
7.7 COW'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i	102
7.8 MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i	126

Informational Use

7.9	LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i	150
7.10	GOAT'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i	174
7.11	LIQUID WASTE MANAGEMENT SYSTEM EFFLUENT SOURCES AND RELEASE PATHWAYS AND POINTS	198
7.12	GASEOUS EFFLUENT SOURCES, GASEOUS WASTE MANAGEMENT SYSTEM EFFLUENT SOURCES AND EXHAUST RELEASE POINTS	200
7.13	RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM	201
7.14	SAMPLE LOCATION TABLE	204
7.15	SECTOR AND ZONE DESIGNATORS FOR RADIOLOGICAL SAMPLING AND MONITORING POINTS	216
7.16	REMP SAMPLING LOCATIONS WITHIN 2 MILES OF WATERFORD 3	217
7.17	REMP SAMPLING LOCATIONS WITHIN 10 MILES OF WATERFORD 3	218
7.18	REMP SAMPLING LOCATIONS WITHIN 50 MILES OF WATERFORD 3	219
7.19	DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, P_i	220
7.20	DOSE CONVERSION FACTORS ALL AGE GROUPS BY NUCLIDE (GROUND PLANE)	274
7.21	DOSE CONVERSION FACTORS FOR ALL AGE GROUPS BY NUCLIDE (INHALATION AND INGESTION)	280
7.22	SPECIFIC FACTORS USED TO DETERMINE A_i , P_i AND R_i VALUES FOR THE OFFSITE DOSE CALCULATION MANUAL	328
7.23	ODCM SPECIFICATIONS CONTAINED IN THE WATERFORD III TECHNICAL REQUIREMENTS MANUAL	346

LIST OF EFFECTIVE PAGES

1-346

Revision 6

201, 206, 209, 212,
213, 214, 215, 219 Change 1

2, 71 Change 2

2, 199, 200, 201, 213, 219 Change 3

1.0 PURPOSE

1.1 The Offsite Dose Calculation Manual (ODCM) is a supporting document of the Waterford 3 Technical Specifications. The ODCM provides:

- (1) The Radiological Effluent Specifications and Radiological Environmental Monitoring Program required by Technical Specification 6.8.4;
- (3) The detailed Radiological Environmental Monitoring Program (REMP);
- (4) The description of the Radiological Environmental Monitoring Interlaboratory Comparison Program;
- (5) The liquid and gaseous radwaste block flow diagram;
- (6) The Radioactive Liquid and Gaseous Waste Sampling and Analysis Programs;
- (7) The general methodology to be used to calculate dose to individuals due to releases of radioactive gaseous and liquid effluents from the Waterford 3 site;
- (8) The general methodology to be used to calculate effluent monitor setpoints and allowable release rates to ensure compliance with the Radiological Effluent Controls, 10CFR20, and 10CFR50 criteria;
- (9) The methodology to be used to ensure representative sampling of liquids; and
- (10) The methodology to be used to comply with 40CFR190 criteria.

2.0 REFERENCES

- 2.1 Waterford 3 SES Technical Specifications (T.S)
 - 2.1.1 T.S. 6.14, Offsite Dose Calculation Manual.
 - 2.1.2 T.S. 6.9.1.7, Annual Radiological Environmental Operating Report.
 - 2.1.3 T.S. 6.9.1.8, Annual Radioactive Effluent Release Report.
 - 2.1.4 T.S. 3/4.11.1.4, Liquid Holdup Tanks.
 - 2.1.5 T.S. 3/4.11.2.6, Gas Storage Tanks.
 - 2.1.6 T.S. 5.1.3, Map Defining Unrestricted Areas for Radioactive Gaseous and Liquid Effluents.
 - 2.1.7 T.S. 6.9.2, Special Reports.
- 2.2 USNRC Regulatory Guide 1.111, Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Gaseous-Effluents from Light-Water-Cooled Reactors, July 1977.
- 2.3 USNRC Regulatory Guide 1.113, Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I, April 1977.
- 2.4 USNRC Regulatory Guide 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10CFR Part 50, Appendix I, Revision 1, October, 1977.
- 2.5 USNRC NUREG 0133, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, October 1978.
- 2.6 Code of Federal Regulations: Title 10, Parts 20, 40, 50 and 100; Title 40, Part 190.

- 2.7 USNRC Generic Letter 89-01, Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program.
- 2.8 International Atomic Energy Agency (IAEA) Safety Series No.57, Generic Models and Parameters for Assessing the Environmental Transfer of Radionuclides from Routine Releases, Exposures of Critical Groups.
- 2.9 USNRC Regulatory Guide 1.21, Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants, Revision 1, June, 1974.
- 2.10 UNT-006-010, Event Notification and Reporting
- 2.11 W2.501, Corrective Action
- 2.12 HASL-300, HASL Procedures Manual; Currie, L.A., "Limits for Qualitative Detection and Quantitative Determination Application to Radiochemistry", Anal Chem. 40, 586-93, (1968).
- 2.13 NUREG/CR-4007, Currie, L.A., "Lower Limit of Detection; Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements", (September 1984).
- 2.14 Radiological Health Handbook, U.S. Department of Health, Education and Welfare, January 1970.

- 2.15 NUREG-1301, Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors, Generic Letter 89-01, Supplement No. 1. (November 1990).
- 2.16 Waterford 3 Technical Requirements Manual (TRM)
- 2.17 NUREG-0172, Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake
- 2.18 NUREG/CR-1276, Users Manual for LADTAP II – A computer program for calculating radiation exposure to man from routine release of nuclear reactor liquid effluents

3.0 DEFINITIONS

- 3.1 OFFSITE DOSE CALCULATION MANUAL (ODCM) shall be comprised of the radiological effluent technical specifications and methodology contained within this procedure and applicable sections of the Technical Requirements Manual (TRM) as listed on Attachment 7.23 of this procedure.
- 3.2 UNRESTRICTED AREA (T.S. 1.36) shall be any area to which access is neither limited nor controlled by the licensee. The definition of UNRESTRICTED AREA used in implementing these Technical Specifications has been expanded over that in 10 CFR 20.1003. The UNRESTRICTED AREA boundary may coincide with the Exclusion (fenced) Area boundary, as defined in 10 CFR 100.3(a), but the UNRESTRICTED AREA does not include areas over water bodies. For calculations performed pursuant to 10 CFR 50.36a, the concept of UNRESTRICTED AREAS, established at or beyond the SITE BOUNDARY, is utilized in the Controls to keep levels of radioactive materials in liquid and gaseous effluents as low as is reasonably achievable, see Attachment 7.1.
- 3.3 LIQUID RADWASTE TREATMENT SYSTEM shall be any system designed and installed to reduce radioactive material in effluents by passing liquid waste through filters and/or absorption or exchange media (e.g. Ion Exchanger Resin, Charcoal etc) and/or other reduction processes (e.g. reverse osmosis, etc) for the purpose of removing radioactive materials from the liquid system prior to the release to the environment.

- 3.4 A MAJOR CHANGE to a radioactive waste system shall be any alteration or modification to the system that causes waste characteristics (e.g. chemical composition, pH, etc.), waste form or waste activity (e.g. equipment decontamination factor change) in liquid, gaseous, or solid effluents to change, thereby requiring a re-evaluation of the effluent source terms.
- 3.5 LOWER LIMITS OF DETECTION (LLD) is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66 S_b}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot e^{-\lambda \Delta t}}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume,

S_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22×10^6 is the number of disintegrations per minute per microcurie,

Y is the fraction radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

Δt for plant effluents is the elapsed time between the midpoint of sample collection and the time of counting. For environmental samples it is the elapsed time between sample collection, or end of the sample collection period, and time of counting.

Typical values of E, V, Y, and Δt should be used in the calculation.

- 3.6 An UNPLANNED/ABNORMAL RELEASE is defined as any unplanned, uncontrolled or unmonitored release of radioactive material to the UNRESTRICTED AREA for liquids or to the SITE BOUNDARY for gases. This includes any unplanned, uncontrolled or unmonitored releases where the radiological consequences may be minimal but where the potential exists for more serious radiological consequences if allowed to recur. Incidents that are to be classified as UNPLANNED/ABNORMAL RELEASES do not include releases that fall within the guidelines of a Secondary Release Pathway. Secondary Release Pathways are usually known and have been previously evaluated or considered.

4.0 RESPONSIBILITIES

- 4.1 General Manager, Plant Operations has lead responsibility for ensuring implementation of the Radiological Effluent Specifications and Radiological Environmental Monitoring Program as required by Technical Specification 6.8.3 and as set forth in this procedure.
- 4.2 The Chemistry Superintendent is responsible for
- a) ensuring Radiological Effluent Specifications, the Radiological Effluent Monitoring Program and Radiological Environmental Monitoring Program (REMP) is performed as required according to procedures and methodologies established by this document.
 - b) ensuring the Annual Effluent Release Report and the Annual Radiological Environmental Operating Report are performed and issued as required.
 - c) ensuring the Land Use Census is performed as required.

5.0 PROCEDURE

5.1 SITE CHARACTERISTICS

Waterford 3 SES Site Characteristics is provided in Chapter 2 of Waterford 3 FSAR (Sections 2.1.1, 2.1.2 and 2.1.3).

A map of the SITE BOUNDARIES for establishing effluent release limits along with radioactive effluent release points are given in Attachment 7.1. The release point elevations for gaseous effluents are also provided in Attachment 7.1. The nearest distances to the boundary line are shown in Attachment 7.2 of this procedure.

5.2 SPECIFICATIONS AND SURVEILLANCE REQUIREMENTS

- 5.2.1 Compliance with the SPECIFICATIONS contained in this procedure and the TRM is required during the conditions specified therein; except that failure to meet the SPECIFICATIONS requires that the associated ACTION requirements shall be met.
- 5.2.2 Noncompliance with this procedure and the TRM shall exist when the requirements of the SPECIFICATION and/or associated ACTION requirements are not met within the specified time intervals. If the SPECIFICATION is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.
- 5.2.3 Surveillance Requirements shall be applicable during all conditions specified for individual systems unless otherwise stated in an individual Surveillance Requirement.
- 5.2.4 Each Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval.
- 5.2.5 Failure to perform a Surveillance Requirement within the specified time interval shall constitute a failure to meet the OPERABILITY requirements for a Specific System for Operation. Exceptions to these requirements are stated in the individual specifications. Surveillance Requirements do not have to be performed on inoperable equipment.
- 5.2.6 Failure to comply with the compensatory ACTION requirements or failure to complete the surveillance requirements within the specified time shall be documented and evaluated in accordance with W2.501, Condition Report and UNT-006-010, Event Notification and Reporting procedures.

5.3 LIQUID EFFLUENTS

5.3.1 Liquid Effluent Dose Calculation

NOTE

The Offsite Dose Calculation Manual (ODCM) follows the general models suggested by NUREG 0133 and Regulatory Guide 1.109. However, alternate calculation methods from those presented may be used provided the overall methodology is acceptable and consistent with regulation or provided the alternate methodology is conservative. In addition, the most up-to-date dose conversion factors and bioaccumulation factors may be substituted in lieu of Regulatory Guide 1.109 values.

NOTE

Actual step-by-step dose calculations will be performed by in-plant procedures which are consistent with the methodology presented in this document.

- 5.3.1.1 The dose commitment to an individual from radioactive materials in liquid effluents released to unrestricted areas are calculated for the purpose of implementing Section 5.3.2 using the following expression:

$$D_{te} = \Delta t_e F_e \sum_{i=1}^n A_{it} C_{ile} \quad (1)$$

$$D_t = \sum_{e=1}^m D_{te} \quad (2)$$

5.3 LIQUID EFFLUENTS (cont'd)

- $D_{t\ell}$ = the cumulative dose commitment to the total body or any organ (t) from the liquid effluents for each liquid release in mrem during time period (ℓ);
- D_t = the cumulative dose commitment to the total body or any organ (t) from the liquid effluents for all (ℓ) time periods;
- Δt_ℓ = the length of the ℓ th time period over which the release is made, in hours;
- $C_{i\ell}$ = the concentration of radionuclide (i) in undiluted liquid effluent during time period Δt_ℓ from any liquid release, in $\mu\text{Ci/ml}$;
- A_{it} = the site-related liquid ingestion dose commitment factor to the total body or any organ (t) for each identified nuclide (i) in mrem-ml/hr- μCi (Attachment 7.3), and;

5.3 LIQUID EFFLUENTS (cont'd)

F_e = the near field average dilution factor for C_{ie} during any liquid effluent release. Defined as the ratio of the undiluted liquid waste flow during release to the average flow from the site discharge structure to site boundary receiving waters.

$$= \frac{\text{liquid radioactive waste flow}}{\text{discharge structure exit flow}}$$

The liquid radioactive waste flow is the maximum flow from the effluent release. The discharge structure exit flow is the flow during disposal from the discharge structure release point into the receiving water body. For radionuclides not determined in each batch or weekly composite, the dose contribution to the current calendar quarter cumulative summation may be approximated by using a ratio of concentrations based on the previous monthly or quarterly composite analyses.

5.3 LIQUID EFFLUENTS (cont'd)

5.3.1.2 Equation (1) above for calculating the dose contributions requires the use of a dose factor, A_{it} , for each nuclide (i) which embodies the dose factors and dilution factors for the points of pathway origin. The adult total body dose factor and the adult organ dose factor for each radionuclide will be used from Table E-11 of Regulatory Guide 1.109; thus the list contains critical organ dose factors for various organs. The dose factor is written:

$$A_{it} = K_o \left(\frac{U_w}{D_w} + U_f B F_i \right) DCF_{it} \quad (3)$$

where:

A_{it} = Composite dose parameter for the total
body or critical organ (t) of an adult for nuclide
(i) for all appropriate pathways (mrem-ml/hr- μ Ci);

K_o = Unit conversion factor;

$$= 1.14e + 5 = 10^6 \frac{pCi}{\mu Ci} \cdot 10^3 \frac{ml}{l} \div 8760 \frac{hr}{yr}$$

U_w = 730 l/yr adult water consumption
(Reg. Guide 1.109, Table E-5);

5.3 LIQUID EFFLUENTS (cont'd)

D_w = Dilution factor from near field area to
potable water intake;

= 220
for discharges from the circulating water discharge into the Mississippi
River (based on the ratio of the average Mississippi River flow to the
maximum discharge flow);

= 1
for discharges into the 40 Arpent Canal (based on the assumption that
dilution from the near field area to a potable water intake is negligible);

U_f = 21 kg/yr, adult fish consumption (Reg. Guide 1.109, Table E-5);

BF_i = Bioaccumulation factor for nuclide (i) in
fish (pCi/kg per pCi/l) from Attachment 7.22 and;

DCF_{it} = Ingestion Dose conversion factor for nuclide (i) and organ (t) for adults
(mrem/pCi), from Attachment 7.21.

5.3 LIQUID EFFLUENTS (cont'd)

5.3.2 Liquid Effluent Monitor Setpoint Calculation Methodology

TRM specifications 3/4.11.1.1 and 3/4.3.3.10 require that the liquid effluent monitoring instrumentation alarm/trip setpoints be set so that the concentration of radioactive material released from the site is limited to 10 times the Effluent concentration values in 10CFR20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to $2E-4$ $\mu\text{Ci/ml}$ total activity. This section presents the method to be used for determining setpoints in accordance with TRM surveillance requirements 3/4.11.1.1 and 3/4.3.3.10.

5.3.2.1 The calculated setpoints for the liquid effluent monitors satisfy the following equation:

$$C = \frac{(SF)(RF)(F+f) \sum_{i=1}^n C_i}{(TEC)(f+F')} \quad (4)$$

5.3 LIQUID EFFLUENTS (cont'd)

where;

- c = the setpoint, in $\mu\text{Ci/ml}$, of the liquid effluent monitor measuring the radioactivity concentration in the effluent line prior to complete dilution and subsequent release. This setpoint represents a value which, if exceeded would result in concentrations exceeding 10 times the Effluent concentration values of 10CFR20, Appendix B, Table 2. Column 2, to an UNRESTRICTED AREA;
- SF = Safety Factor to ensure that the effluent limit is not exceeded. A value of 0.8 is normally used for SF;
- RF = Release Fraction allocated to this release (to be used only in situations of simultaneous or concurrent release);
- f = the undiluted liquid effluents flow as measured at the liquid effluent monitor location in gpm;
- F = the dilution water flow as determined via pump curves or other appropriate measures that determine correct plant operating configuration in gpm;

NOTE

If F is large compared to f then $F + f \approx F$. If there is no additional dilution, $F' = 0$.

- $F' =$ additional dilution flow at the radiation monitor for liquid effluent radiation monitors that have additional dilution prior to actual withdrawal of the monitored fluid, in gpm.
- $=$ 1000 (maximum) for Steam Generator Blowdown or Auxiliary Component Cooling Water releases to the circulating water system.
- $=$ 0 for all other liquid release points.

5.3 LIQUID EFFLUENTS (cont'd)

C_i = the undiluted concentration in $\mu\text{Ci/ml}$ for all gamma emitting radionuclides (i). The value will be derived from radioanalysis of liquid effluent to be released. This value will be supplied for each liquid release;

$$TEC = \sum_{i=1}^n \frac{C_i}{10EC_i} + \sum_{j=1}^m \frac{C_j}{10EC_j}$$

C_j = the undiluted concentration, in $\mu\text{Ci/ml}$, for all non-gamma emitting radionuclides (j). This value will be derived from radioanalysis of composite liquid effluents released. This value will be supplied for each liquid release based upon the most recent analysis results.

$\frac{C_i}{MPC_i}$ = the undiluted gamma MPC fraction for all gamma emitting radionuclides

$\frac{C_j}{MPC_j}$ = the undiluted non - gamma MPC fraction for all non - gamma emitting radionuclides

$10EC_i$ = 10 times the Effluent Concentration for the applicable gamma-emitting isotopes (i) from 10CFR20, Appendix B, Table 2, Column 2; and

$10EC_j$ = 10 times the Effluent Concentration for the applicable non-gamma emitting isotopes (j) from 10CFR20, Appendix B, Table 2, Column 2

5.3.2.2 The values of C_i and C_j will be measured for each release as appropriate and the parameters for f , F' and F will be supplied based on current plant operating configurations. The setpoint will be calculated in terms of $\mu\text{Ci/ml}$ and the liquid effluent monitor will be adjusted as necessary to ensure that liquid releases are secured prior to exceeding 10 times the Effluent concentration values specified in 10CFR20, Appendix B, Table 2, Column 2 to an UNRESTRICTED AREA.

5.3 LIQUID EFFLUENTS (cont'd)

5.3.3 Representative Liquid Sampling

Prior to grab sampling liquid waste tanks, methods should be used to guarantee representative sampling. Large volumes of liquid waste should be mixed in as short a time as possible and uniformly distributed prior to sampling. To determine the minimum mixing time for tanks from which releases are made, the following tests were performed prior to initial use for release purposes.

- a. The tank was filled to a known volume.
- b. A specific quantity of a selected chemical and/or sediments was added to the tank.
- c. Recirculation was initiated through the normal path.
- d. Periodic samples were taken until equilibrium was reached.
- e. The time observed to completely mix the tank is used as a minimum recirculation time prior to effluent sampling. Records of the test will be maintained.

5.3.4 Dose Projection for Liquid Effluents

At least once every 31 days, the total dose from all liquid releases for the quarter-to-date will be divided by the number of days expired in the quarter and multiplied by 31.

5.4 GASEOUS EFFLUENTS

NOTE

The Offsite Dose Calculation Manual (ODCM) follows the general models suggested by NUREG 0133 and Regulatory Guide 1.109. However, alternate calculation methods from those presented may be used provided the overall methodology is acceptable and consistent with regulation or provided the alternate methodology is conservative. In addition, the most up-to-date dose conversion factors and bioaccumulation factors may be substituted in lieu of Regulatory Guide 1.109 values.

NOTE

Actual step-by-step dose calculations will be performed by in-plant procedures which are consistent with the methodology presented in this document.

5.4.1 Calculational Methodology for Gaseous Effluent Dose Rate

This section presents the calculational methods used for calculating gaseous effluent doses in fulfillment of Specification

- 5.4.1.1 The dose rate due the radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be limited to the following values and expressions:

5.4 GASEOUS EFFLUENTS (cont'd)

Release rate limit for Noble Gases:

$$\overline{K(X/Q)}_v \sum_{i=1}^n K_i Q_{iv} \leq 500 \frac{\text{mrem}}{\text{yr}} \text{ total body} \quad (5)$$

$$\overline{(X/Q)}_v \sum_{i=1}^n (L_i + 1.1M_i) Q_{iv} \leq 3000 \frac{\text{mrem}}{\text{yr}} \text{ skin} \quad (6)$$

Release rate limit for Iodine-131, Iodine-133, Tritium and for all radionuclides in particulate form with half-lives greater than 8 days:

$$\overline{(X/Q)}_v \sum_{i=1}^n P_{it} Q_{iv} \leq 1500 \frac{\text{mrem}}{\text{yr}} \text{ any organ} \quad (7)$$

Where:

$\overline{(X/Q)}_v = 1.1\text{E-}5 \text{ sec/m}^3$ in the ESE sector at 0.6 mile for all vent releases (v)
(the highest calculated annual average dispersion factor at the SITE
BOUNDARY based on historical data Attachment 7.2). The actual
X/Q for the time of release may be determined and used under
certain circumstances;

$\sum_{i=1}^n$ = summation for all identified radionuclides;

5.4 GASEOUS EFFLUENTS (cont'd)

- K_i = the total body dose factor due to gamma emissions for each identified radionuclide (i) in units of mrem/yr per $\mu\text{Ci}/\text{m}^3$ (Attachment 7.4);
- L_i = the skin dose factor due to beta emissions for each identified radionuclide (i) in units of mrad/yr per $\mu\text{Ci}/\text{m}^3$ (Attachment 7.4);
- M_i = the air dose factor due to gamma emissions for each identified radionuclide (i) in units of mrad/yr per $\mu\text{Ci}/\text{m}^3$ (Attachment 7.4). The constant 1.1 converts air dose to skin dose;
- P_{it} = the thyroid dose parameter for Iodine-131, Iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days (i) for the inhalation pathway only, in mrem/yr per $\mu\text{Ci}/\text{m}^3$ (Attachment 7.19). The dose factor is based on the most restrictive age group (child) and most restrictive organ at the SITE BOUNDARY; and

5.4 GASEOUS EFFLUENTS (cont'd)

NOTE

All radioiodines are assumed to be released in elemental form.

Q_{iv} = the average release rate of radionuclides (i)
(either noble gas or Iodine-131, Iodine-133, tritium, and radionuclides in the particulate form with half-lives greater than 8 days, as appropriate) during the time of release from all vent releases (v). Value is averaged over one hour and is in units of $\mu\text{Ci/sec}$.

5.4 GASEOUS EFFLUENTS (cont'd)

5.4.2 Calculational Methodology for Noble Gas Doses

5.4.2.1 The air dose due to noble gases released in gaseous effluents to areas at or beyond the SITE BOUNDARY will be determined by the following expressions:

a. During any calendar quarter,

for gamma radiation:

$$D_{\gamma} = (1.14e - 4) \left(\overline{X/Q} \right)_v \sum_{i=1}^n M_i \sum_{j=1}^m \Delta t_j Q_{ijv} \quad (8)$$

for beta radiation:

$$D_{\beta} = (1.14e - 4) \left(\overline{X/Q} \right)_v \sum_{i=1}^n N_i \sum_{j=1}^m \Delta t_j Q_{ijv} \quad (9)$$

b. During any calendar year,

for gamma radiation:

$$D_{\gamma} = (1.14e - 4) \left(\overline{X/Q} \right)_v \sum_{i=1}^n M_i \sum_{j=1}^m \Delta t_j Q_{ijv} \quad (10)$$

for beta radiation:

$$D_{\beta} = (1.14e - 4) \left(\overline{X/Q} \right)_v \sum_{i=1}^n N_i \sum_{j=1}^m \Delta t_j Q_{ijv} \quad (11)$$

5.4 GASEOUS EFFLUENTS (cont'd)

Where:

D_γ = the total gamma (γ) air dose from gaseous effluents for
the total time period and not to exceed 5 mrad quarterly and 10 mrad yearly;

D_β = the total beta (β) air dose from gaseous effluents for
the total time period and not to exceed 10 mrad quarterly and 20 mrad
yearly;

$1.14E-04$ = a constant of (1 yr/8760 hr);

$\overline{(X/Q)}_v = 1.1E-5 \text{ sec/m}^3$ in the ESE sector at 0.6 mile
for all vent releases (v). The actual X/Q for the time of release may be
determined and used under certain circumstances;

5.4 GASEOUS EFFLUENTS (cont'd)

M_i and N_i = the gamma and beta air dose factors
(respectively) for a uniform semi-infinite cloud of radionuclide (i) in
mrad/yr per $\mu\text{Ci}/\text{m}^3$ (Attachment 7.4);

Δt_j = the length of the jth time period over which Q_{ijv} are accumulated for all
gaseous releases in hours; and

Q_{ijv} = the average release rate of radionuclides (i) in gaseous effluent from all
vent releases (v) in $\mu\text{Ci}/\text{sec}$ during the time period Δt_j .

5.4 GASEOUS EFFLUENTS (cont'd)

5.4.3 Calculational Methodology for Doses Due to Radioiodines, Tritium, and Radioactive Materials in Particulate Form

5.4.3.1 The dose to an individual from iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the SITE BOUNDARY will be determined by the following expressions:

During any calendar quarter:

$$D_{ita} = (1.14e-4) \Delta t \sum_{i=1}^n R_{ita} W_v Q_{iv} \quad (12)$$

During any calendar year:

$$\bar{D}_{ita} = (1.14e-4) \Delta t \sum_{i=1}^n R_{ita} W_v Q_{iv} \quad (13)$$

5.4 GASEOUS EFFLUENTS (cont'd)

Where:

D_{ita} = the cumulative dose to an organ (t), age group (a),
due to radionuclides (i) in gaseous effluents; not to exceed 7.5 mrem
quarterly or 15 mrem yearly;

$1.14E-4$ = a constant of unit conversion

= 1 yr/8760 hr;

Δt = the time required for the release in hours for all
releases per quarter or per year.

W_v = the dispersion parameter for estimating the dose to
an individual at the controlling location for long term vent releases (v);

= $\overline{(x/q)}_v$ for the inhalation pathway from vent releases (v) in sec/m³, from
historical data, at the location of the critical receptor (Attachment 7.2);

= $\overline{(D/q)}_v$ for the food and ground plane pathways
from vent releases (v) in 1/m², from historical data at the location of the
critical receptor (Attachment 7.2), with the exception of tritium, which shall
use $W_v = \overline{(x/q)}_v$;

R_{ita} = the dose factor from each identified radionuclide (i),
for each applicable organ (t), and age group (a), in mrem/yr per $\mu\text{Ci}/\text{m}^3$ for
the inhalation pathway (Attachment 7.5) and in mrem/yr per $\mu\text{Ci}/\text{m}^2\text{-sec}$ for
the food and ground plane pathways (Attachments 7.6, 7.7, 7.8, 7.9, and
7.10). For sectors with real pathways within 5 miles of the plant, the
values of R_i are used based on these real pathways. (R_i 's were calculated
using the methodology found in NUREG 0133, Reference 2.5, pages 31-
36.); and

Q_{iv} = the average release rate of radionuclides (i) in gaseous effluent from all
vent releases (v) in $\mu\text{Ci}/\text{sec}$.

5.4 GASEOUS EFFLUENTS (cont'd)

5.4.4 Gaseous Effluent Monitor Setpoint Calculational Methodology

5.4.4.1 The calculated high alarm/flow termination setpoint is the maximum value for that particular release. An administrative Safety Factor (SF) will be utilized in the setpoint calculation. To allow for simultaneous releases from common or different release points a Release Fraction (RF) may be used to allocate percentages of the total allowable release.

5.4.4.2 Since the noble gas dose rates are more limiting than the radioiodine dose rate, gaseous setpoints will be based on noble gas dose rates (less than or equal to 500 mrem/yr total body, and less than or equal to 3000 mrem/yr skin). Specifically, gaseous setpoints will be based on the most limiting of the following equations:

5.4 GASEOUS EFFLUENTS (cont'd)

a. Total body (Q_{tb}):

$$Q_{tb} = \frac{(500 \frac{\text{mrem}}{\text{yr}})(\text{RF})(\text{SF})}{(\overline{x/Q})_v \frac{\left[\sum_{i=1}^n K_i Q_{iv} \right]}{\left[\sum_{i=1}^n Q_{iv} \right]}} \quad (14)$$

Where:

Q_{tb} = maximum release rate allowed to give a limiting total body dose rate of 500 mrem/yr in $\mu\text{Ci/sec}$;

$\sum_{i=1}^n$ = summation of all nuclides considered;

K_i = the total body dose factor due to gamma emissions for each identified radionuclide (i) in units of mrem/yr per $\mu\text{Ci/m}^3$ (Attachment 7.4);

5.4 GASEOUS EFFLUENTS (cont'd)

Q_{iv} = average release rate of isotope (i) from the release point (v) in $\mu\text{Ci/sec}$;

$\overline{(x/Q)}_v = 1.1\text{E-}5 \text{ sec/m}^3$ (in the ESE sector at 0.6 mile). The sector with highest value of annual average atmospheric dispersion factor at the site boundary for the release point (v) in question;

RF = release fraction allotted to release point in consideration; and

SF = administrative safety factor to account for uncontrollable variables (sampling, monitoring errors, etc.). A value of 0.8 is normally used for SF.

5.4 GASEOUS EFFLUENTS (cont'd)

b. For Skin (Q_{skin}):

$$Q_{\text{skin}} = \frac{(3000 \frac{\text{mrem}}{\text{yr}})(\text{RF})(\text{SF})}{\left(\frac{\sum_{i=1}^n (L_i + 1.1M_i)Q_{iv}}{\sum_{i=1}^n Q_{iv}} \right)} \quad (15)$$

Where:

all terms are as defined in Step (a) for Q_{tb} ,
except:

Q_{skin} = maximum release rate allowed to give a limiting skin dose of
3000 mrem/yr in $\mu\text{Ci/sec}$;

L_i = skin dose factor due to beta emissions for each identified radionuclide
(i) in units of mrem/yr per $\mu\text{Ci/m}^3$ (Attachment 7.4);

1.1 = conversion factor to convert from air to skin dose; and

M_i = air dose factor due to gamma emissions for identified noble gas isotope
(i) in units of mrad/yr per $\mu\text{Ci/m}^3$ (Attachment 7.4).

5.4 GASEOUS EFFLUENTS (cont'd)

5.4.4.3 The monitor setpoint is calculated in the following manner:

$$SN = \frac{Q}{(F_{\max})(472)} \quad (16)$$

Where:

SN = maximum monitor setpoint in $\mu\text{Ci}/\text{cm}^3$;

Q = Minimum value of Q_{tb} or Q_{skin} ($\mu\text{Ci}/\text{sec}$).

F_{\max} = maximum effluent flow rate (cfm); and

472 = Unit conversion, CFM to cm^3/sec

5.4 GASEOUS EFFLUENTS (cont'd)

5.4.5 Dose Projection due to Gaseous Effluents

- 5.4.5.1 At least once every 31 days the gamma air dose, beta air dose and the maximum organ dose for the month-to-quarter will be divided by the number of days into the quarter and multiplied by 31.

5.5 40 CFR190 DOSE EVALUATION

For the evaluation of doses to real individuals from liquid releases, the same calculational methods as employed in Section 5.3.4 will be used. However, more encompassing and realistic assumptions will be made concerning the dilution and ingestion of radionuclides by individuals who live and fish in the Waterford 3 area.

The results of the Radiological Environmental Monitoring Program will be used in determining the realistic dose based on actual measured radionuclide concentrations. For the evaluation of doses to real individuals from gaseous releases, the same calculational methods as employed in sections 5.4.6 and 5.4.7 will be used. The total body dose factor should be substituted for the gamma air dose factor (M_i) to determine the total body dose. Otherwise, the same calculational sequence applies. More realistic assumptions will be made concerning the actual location of real individuals, the meteorological conditions, and the consumption of food. Data obtained from the latest land use census should be used to determine locations for evaluating doses. The results of the Radiological Environmental Monitoring Program will be included in determining more realistic doses based on actual measured radionuclide concentrations.

Cumulative dose contributions from direct radiation, from the reactor unit, and from Radwaste Storage Tanks shall be determined utilizing the results of routine plant perimeter surveys, TLD data, or a combination of both when necessary.

5.6 LIQUID AND GASEOUS RADWASTE PROCESSES

The block flow diagrams of the radwaste systems are shown in Attachments 7.11 and 7.12. In order to obtain a more detailed description, see the appropriate sections of the FSAR.

5.7 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS

5.7.1 Description of the Radiological Environmental Monitoring Program

The Radiological Environmental Monitoring Program (REMP) is expounded on in Attachment 7.13, and the Sample Location Table, Attachment 7.14. Attachment 7.15 explains the sector and zone designations for the sample locations. Attachments 7.16, 7.17 and 7.18 show the sample locations within the 2, 10, and 50 mile radius of Waterford 3.

Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report. It is recognized that, at times, it may not be possible or practical to continue to obtain samples of the media of choice at the most desired location or time. In these instances, suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the Radiological Environmental Monitoring Programs.

5.7 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS (Cont'd)

5.7.2 Description of the Interlaboratory Comparison Program

Quality assurance in radiological environmental sampling will be maintained through participation in a selected Radiological Laboratory Quality Assurance Program. The summary of results will be presented in tabular form and will include the type of analysis, the preparation (collection) date, the date the results are returned, the mean of the analyses (usually triplicate), the standard deviation, the date the values are released for information, the known value, the three standard deviation limit, and a two standard deviation/three standard deviation warning/action flag. If the sample analysis indicates results outside the three standard deviation range, then the corrective actions taken to prevent a recurrence will be documented and submitted along with all results when the Annual Radiological Environmental Operating Report is submitted.

5.7 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS (Cont'd)

5.7.3 Dispersion Parameters For Critical Locations

The dispersion parameters for the site boundary and where necessary, as identified by the Land Use Census, are listed in Attachment 7.2. This table will be subject to changes based on the Land Use Census and historical data.

5.8 ROUTINE EFFLUENT RELEASE REPORTS

5.8.1 Annual Radioactive Effluent Release Report

A routine Radioactive Effluent Release Report covering the operation of the unit during the previous Twelve months shall be submitted as specified in Waterford 3 SES, Technical Specification 6.9.1.8 prior to May 1 of each year. The radioactive effluent release report shall include:

- 5.8.1.1 A summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the units as outlined in Regulatory Guide 1.21, Reference 2.9, with data summarized on a quarterly basis following the format of Appendix B thereof.
- 5.8.1.2 An annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing of wind speed, wind direction, and atmospheric stability, and precipitation (if measured) on magnetic tape, or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability.

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

In lieu of submission with the Radioactive Effluent Release Report, the summary of required meteorological data may be filed on site and shall be provided to the NRC upon request. This same report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year. This same report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY (Attachment 7.1) during the reporting period. All assumptions used in making these assessments (i.e., specific activity, exposure time and location) shall be included in these reports. The meteorological conditions concurrent with the time of release of radioactive materials in gaseous effluents, as determined by sampling frequency and measurement, shall be used for determining the gaseous pathway doses. The assessment of radiation doses shall be performed in accordance with the methodology and parameters in this manual.

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

5.8.1.3 An assessment of radiation doses to the likely most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40CFR190, "Environmental Radiation Standards for Nuclear Power Operation". Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in Regulatory Guide 1.109, Rev. 1, October 1977, and NUREG-0133.

5.8.1.4 The following information for each class of solid waste (as defined by 10CFR 61) shipped off site during the report period:

- A. Container volume
- B. Total curie quantity (specify whether determined by measurement or estimate),
- C. Principal radionuclides (specify whether determined by measurement or estimate),
- D. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),
- E. Type of container (e.g., LSA, Type A, Type B Large Quantity), and
- F. Solidification agent or absorbent (e.g., cement, urea formaldehyde).

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

- 5.8.1.5 A list and description of unplanned releases from the site to UNRESTRICTED AREAS of radioactive materials in gaseous and liquid effluents made during the reporting period.
- 5.8.1.6 Any changes to the Process Control Program (PCP) or the Offsite Dose Calculation Manual (ODCM), pursuant to Technical Specification 6.13 and 6.14, as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census. It shall also include information of any MAJOR CHANGES to Radioactive Waste Systems if the information is not submitted as part of the annual FSAR update. Any changes made to the sections of the Waterford III TRM listed on Attachment 7.23 shall be included as part of submittal of the changes made to the ODCM.

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

A. The submittal providing information on ODCM changes shall contain:

1. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information. Information submitted should consist of a complete legible copy of the ODCM including the sections of the TRM listed on Attachment 7.23 together with appropriate analyses or evaluations justifying the change(s), if applicable.
2. A determination that the change did not reduce the accuracy or reliability of dose calculations or setpoint determinations.
3. Documentation of the fact that the change has been reviewed and found acceptable by the Plant Operations Review Committee (PORC).

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

- B. The submittal providing information on PCP changes shall contain:
1. Information submitted should consist of a complete legible copy of the PCP, together with appropriate analyses or evaluations, justifying the changes(s), if applicable.
 2. Documentation of the fact that the change has been reviewed and found acceptable by the Plant Operations Review Committee (PORC).

NOTE

Radioactive Waste System change information may be submitted as part of the annual FSAR update in lieu of the Annual Radioactive Effluent Release Report.

- C. The submittal providing information on licensee initiated MAJOR CHANGES to the radioactive waste systems (liquid, gaseous, and solid) shall contain:
1. A summary of the evaluation that led to the determination that the change could be made in accordance with 10CFR50.59
 2. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information.
 3. A detailed description of the equipment, components and processes involved and the interfaces with other plant systems.
 4. An evaluation of the change which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto.
 5. An evaluation of the change which shows the expected maximum exposures a member of the Public in the unrestricted area and to the general population that differ from those previously estimated in the license application and amendments thereto.

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

6. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period before the changes are to be made.
 7. An estimate of the exposure to plant operating personnel as a result of the change.
 8. Documentation of the fact that the change was reviewed and found acceptable by the Plant Operating Review Committee.
 9. Changes to Radioactive Waste Systems performed using the plant design change process will be reported as per design change procedures.
- 5.8.1.7 If applicable, a description of events which led to exceeding the following limiting condition for operation:

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

- A. The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to TRM specification 3/4.11.2.1.
- B. The quantity of radioactive material contained in each unprotected tank shall be limited to Technical Specification 3/4.11.1.4.

5.8.1.8 If applicable, identify the cause of the unavailability of milk or fresh leafy vegetable samples at locations required by TRM specification Table 3.12-1. The new location(s) for obtaining replacement samples shall be identified. Revised figure(s) and table for the ODCM reflecting the new locations shall be included in the report.

5.8.1.9 Identify the new location(s), if a land use census identifies an environmental sampling location that yields a calculated dose or dose commitment greater than the values currently being calculated pursuant to TRM Specification 3/4.11.2.3.

5.8.1.10 Identify the new location(s), and include a revised figure(s) and table for the ODCM reflecting the new location(s) if a land use census identifies an environmental sampling location(s) that yield a calculated dose or dose commitment (via the same exposure pathway) 20% greater than at a location from which samples are currently being obtained pursuant to TRM Specification 3/4.12.1.

5.8 ROUTINE EFFLUENT RELEASE REPORTS (cont'd)

- 5.8.1.11 With less than the minimum number of radioactive liquid or gaseous effluent monitoring instrumentation channels operable for 30 days or longer, as required by TRM Specification Table 3.3-12 or 3.3-13, explain in the next Annual Radioactive Effluent Release Report, pursuant to Technical Specification 6.9.1.8, why this inoperability was not corrected within the time specified.

NOTE

The Shift Supervisor shall be immediately notified and a Condition Report promptly initiated whenever an effluent sample is late or missing in accordance with applicable Specifications.

- 5.8.1.12 Identify any missing or late analysis results for radioactive effluent samples collected during the reporting period.

5.9 SPECIAL EFFLUENT REPORTS

5.9.1 The Shift Supervisor shall be immediately notified and a Condition Report promptly initiated whenever any of the following specifications have been exceeded. A Special Report shall be prepared for submittal to the NRC within 30 day period, as per the ACTION requirement of the specification that has been exceeded.

5.9.1.1 TRM Radioactive Liquid Effluent Dose Specification 3/4.11.1.2

5.9.1.2 TRM Radioactive Liquid Waste Treatment System Specification
3/4.11.1.3

5.9.1.3 TRM Radioactive Gaseous Effluent Dose, Noble Gas Specification
3/4.11.2.2

5.9.1.4 TRM Radioactive Gaseous Effluent Dose, Iodine 131, I-133, Tritium,
and Radionuclides in Particulate Form Specification 3/4.11.2.3

5.9.1.5 TRM Radioactive Gaseous Waste Treatment System Specification
3/4.11.2.4

5.9.1.6 TRM Radioactive Effluent Total Dose Specification 3/4.11.4

5.9 SPECIAL EFFLUENT REPORTS (cont'd)

5.9.2 Environmental Protection Agency Reportable Quantities

- 5.9.2.1 If any of TRM specifications 3/4.11.1.1, 3/4.11.1.2, 3/4.11.2.1, 3/4.11.2.2, 3/4.11.2.3 have been exceeded, an evaluation of the Radioactivity released verses EPA Reportable Quantities (RQ's) shall be performed as soon as practical.

The Shift Supervisor shall be immediately notified and a Condition Report promptly initiated whenever any radionuclide released over a 24 hour period is greater than or equal to the EPA RQ. Notification requirements shall be performed as per UNT-006-010, Event Evaluation and Reporting. Recipients of notification are: The National Response Center, the State Emergency Response Commission, and the Local Emergency Planning Committee. Methods for determination of reportability and the Reportable Quantities values for radionuclides are contained within 40CFR302.

5.9.3 Unplanned/Abnormal Effluent Releases

- 5.9.3.1 A Condition Report should be initiated, in accordance with W2.501, for an UNPLANNED/ABNORMAL RELEASE to ensure that reporting requirements are determined. The Condition Report shall also serve to document causes and corrective actions. Major liquid spills or gaseous releases can occur through improper valve line-up, pipe breakage, or leakage. Each incident should be treated on a case-by-case basis.

The Condition Report shall include:

- a description of the event and equipment involved,
- cause(s) for the release,
- consequences of the release (if known or available)
- actions taken to prevent recurrence.

It is recognized that all elements that are to be included in the Condition Report (listed above) may not be known when the Condition Report is initiated. These items should be included while using the normal Condition Reporting process.

All Condition Reports for UNPLANNED/ABNORMAL RELEASES shall be reviewed by:

- The Plant Operations Review Committee (PORC)
- The Safety Review Committee (SRC)
- The Vice President - Operations

The Plant Operations Review Committee shall review evaluations, recommendations, and the disposition of corrective action(s) to prevent recurrence as documented in the Condition Report. These reports will be forwarded to the Safety Review Committee and the Vice President - Operations for additional review.

5.9.3 Unplanned/Abnormal Effluent Releases (cont'd)

5.9.3.2 Prepare an effluent assessment report for each occurrence of an UNPLANNED/ABNORMAL RELEASE of radioactive materials. The purpose of this report is to document offsite impacts due to radioactive effluent releases. This report should include a description of the event, remedial actions, results of sampling and analysis (if applicable). The assessment should include evaluations of the following:

- concentrations of radioactive materials in unrestricted areas
- doses to the most likely exposed member of the public
- any environmental impacts due to radioactivity in the environment.

All assumptions and calculations used should be described and provided when necessary to support the conclusions. Doses should be calculated in accordance with the methods and parameters contained within the ODCM. Each occurrence of UNPLANNED/ABNORMAL RELEASE should also be included in the Annual Effluent Release Report covering the period for which the event occurred as per step 5.8.1.5.

Each effluent assessment report shall be reviewed by:

- the Plant Operations Review Committee (PORC)
- the Safety Review Committee (SRC)
- The Vice President - Operations.

The Plant Operations Review Committee shall review the effluent assessment report. This report will be forwarded to the Safety Review Committee and the Vice President - Operations for additional review.

5.10 SECONDARY RELEASE PATHS

5.10.1 This section addresses potential release pathways which should not contribute more than 10% of the annual doses evaluated in this manual. The ODCM methodology for calculation of doses will be applied to an applicable release path if a likely potential arises for contributing more than 10% of the annual doses evaluated in this manual.

5.10.2 Secondary Release Paths are expected to release trivial quantities of radionuclides. Some examples of Secondary Release Paths are listed below:

- Unmonitored Secondary System Steam Vents/Reliefs
- Decon Shop/Hot Machine Shop Exhaust
- Turbine Building Ventilation Exhaust
- Unmonitored Tank Atmospheric Vents
- Radioactive Waste Compactor Building
- Radioactive Waste Solidification Building
- Cooling Tower Atmospheric Entrainment

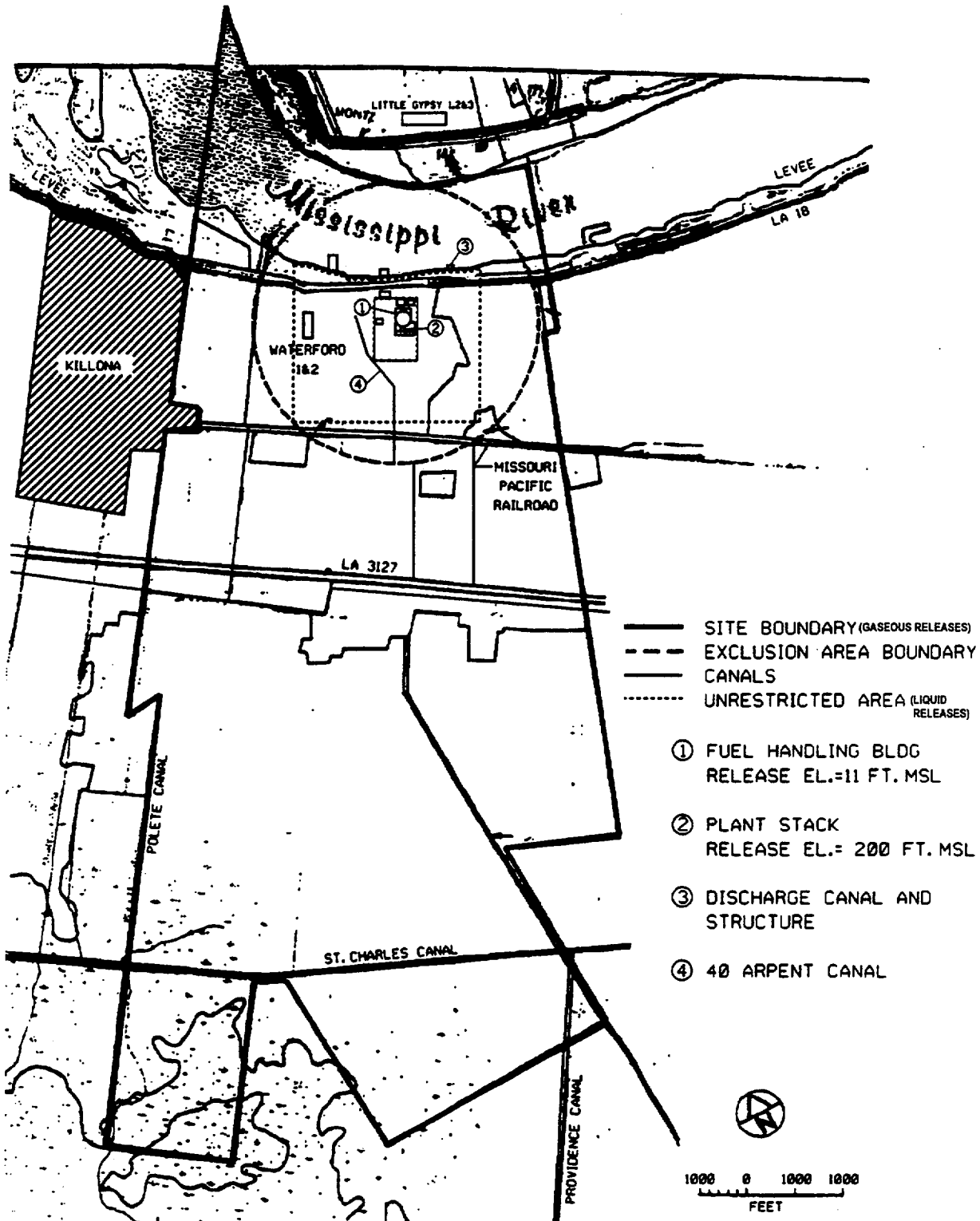
6.0 RECORDS

None

7.0 ATTACHMENTS

Refer to Table of Content

BOUNDARIES FOR
RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS



HISTORICAL AVERAGE DISPERSION AND DEPOSITION PARAMETERS FOR AREAS AT OR BEYOND THE UNRESTRICTED AREA BOUNDARY

ANNUAL AVERAGE ATMOSPHERIC DISPERSION AND DEPOSITION PARAMETERS
BASED ON HISTORICAL METEOROLOGICAL DATA AND CURRENT LAND USE CENSUS

Receptor Type or Location	Direction from Site	Sector Location	Distance from Site		X/Q No Decay Undepleted (sec/m ³)	D/Q (1/m ²)
			(miles)	(meters)		
Site Boundary	N ^a	A	0.8	1287	1.0e-05	2.4e-08
	NNE ^a	B	0.6	966	1.6e-05	3.4e-08
	NE ^a	C	0.6	966	1.5e-05	2.8e-08
	ENE ^a	D	0.6	966	1.6e-05	2.5e-08
	E	E	0.8	1287	6.9e-06	1.3e-08
	ESE	F	0.6	966	1.1e-05	2.3e-08
	SE	G	0.6	966	1.1e-05	3.1e-08
	SSE	H	0.8	1287	6.3e-06	2.4e-08
	S	J	1.6	2575	8.9e-07	2.7e-09
	SSW	K	3.1	4989	3.0e-07	7.9e-10
	SW	L	3.4	5472	3.3e-07	9.1e-10
	WSW	M	1.5	2414	1.7e-06	4.9e-09
	W	N	1.0	1609	2.3e-06	7.3e-09
	WNW	P	0.8	1287	7.5e-06	2.7e-08
	NW	Q	0.8	1287	1.0e-05	3.2e-08
	NNW	R	0.9	1448	9.4e-06	2.4e-08
Residence	N	A	0.9	1448	7.8e-06	1.8e-08
	NNE	B	1.3	2092	3.0e-06	5.8e-09
	NE	C	0.9	1448	6.3e-06	1.2e-08
	ENE	D	0.9	1448	6.8e-06	1.1e-08
	E	E	2.2	3541	7.4e-07	1.0e-09
	ESE	F	3.1	4989	3.7e-07	4.8e-10
	SE	G	4.0	6437	2.3e-07	3.6e-10
	W	N	1.0	1609	2.3e-06	7.3e-09
	WNW	P	0.9	1448	5.6e-06	2.0e-08
	NW	Q	0.9	1448	7.7e-06	2.3e-08
	NNW	R	3.0	4828	7.7e-07	1.3e-09
Milk Cow	NW ^b	Q	0.9	1448	7.7e-06	2.3e-08
	NW	Q	4.9	7886	2.6e-07	4.1e-10
Vegetable Garden	N	A	1.0	1609	6.1e-06	1.4e-08
	NNE	B	1.3	2092	3.0e-06	5.8e-09
	NE	C	0.9	1448	6.3e-06	1.2e-08
	ENE	D	0.9	1448	6.8e-06	1.1e-08
	E	E	2.2	3541	7.4e-07	1.0e-09
	ESE	F	2.2	3541	7.0e-07	1.1e-09
	SE	G	2.3	3701	6.2e-07	1.3e-09
	WSW	M	1.5	2414	1.7e-06	4.9e-09
	W	N	1.1	1770	1.9e-06	5.7e-09
	WNW	P	0.9	1448	5.6e-06	2.0e-08
	NW	Q	0.9	1448	7.7e-06	2.3e-08
	NNW	R	3.0	4828	7.7e-06	1.3e-09
Beef Cow	E	E	3.2	5150	3.7e-07	4.2e-10
	ESE	F	3.5	5633	3.0e-07	3.6e-10
	SE	G	4.5	7242	1.9e-07	2.8e-10
	WSW	M	1.2	1931	2.7e-06	8.6e-09
	WNW	P	0.9	1448	5.6e-06	2.0e-08
	NW	Q	0.9	1448	7.7e-06	2.3e-08
	NNW	R	2.3	3701	1.3e-06	2.4e-09

Notes: ^a The site boundary in this sector is located over water. The location cannot be occupied continuously for the life of the plant.

^b The animals at this location do not produce milk for human consumption.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station Unit III
 Discharge point :: Circulating Water Discharge to Mississippi River
 Dilution Factor DW = 220.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.52e-01	1.52e-01	1.52e-01	1.52e-01	1.52e-01	1.52e-01
Be-10	1.64e+01	2.54e+00	4.10e-01	0.00e+00	1.92e+00	0.00e+00	1.38e+02
C-14	3.13e+04	6.26e+03	6.26e+03	6.26e+03	6.26e+03	6.26e+03	6.26e+03
N-13	3.00e+03	3.00e+03	3.00e+03	3.00e+03	3.00e+03	3.00e+03	3.00e+03
F-18	1.52e+01	0.00e+00	1.68e+00	0.00e+00	0.00e+00	0.00e+00	4.50e-01
Na-22	4.17e+03	4.17e+03	4.17e+03	4.17e+03	4.17e+03	4.17e+03	4.17e+03
Na-24	4.08e+02	4.08e+02	4.08e+02	4.08e+02	4.08e+02	4.08e+02	4.08e+02
P-32	4.62e+07	2.87e+06	1.79e+06	0.00e+00	0.00e+00	0.00e+00	5.19e+06
Ca-41	1.78e+04	0.00e+00	1.92e+03	0.00e+00	0.00e+00	0.00e+00	1.77e+01
Sc-46	2.85e-02	5.53e-02	1.61e-02	0.00e+00	5.16e-02	0.00e+00	2.69e+02
Cr-51	0.00e+00	0.00e+00	1.27e+00	7.62e-01	2.81e-01	1.69e+00	3.21e+02
Mn-54	0.00e+00	4.38e+03	8.35e+02	0.00e+00	1.30e+03	0.00e+00	1.34e+04
Mn-56	0.00e+00	1.10e+02	1.95e+01	0.00e+00	1.40e+02	0.00e+00	3.52e+03
Fe-55	6.59e+02	4.56e+02	1.06e+02	0.00e+00	0.00e+00	2.54e+02	2.61e+02
Fe-59	1.04e+03	2.45e+03	9.38e+02	0.00e+00	0.00e+00	6.83e+02	8.15e+03
Co-57	0.00e+00	2.10e+01	3.49e+01	0.00e+00	0.00e+00	0.00e+00	5.33e+02
Co-58	0.00e+00	8.95e+01	2.01e+02	0.00e+00	0.00e+00	0.00e+00	1.81e+03
Co-60	0.00e+00	2.57e+02	5.67e+02	0.00e+00	0.00e+00	0.00e+00	4.83e+03
Ni-59	2.34e+03	8.03e+02	3.91e+02	0.00e+00	0.00e+00	0.00e+00	1.65e+02
Ni-63	3.12e+04	2.16e+03	1.05e+03	0.00e+00	0.00e+00	0.00e+00	4.51e+02
Ni-65	1.27e+02	1.64e+01	7.51e+00	0.00e+00	0.00e+00	0.00e+00	4.17e+02
Cu-64	0.00e+00	1.00e+01	4.70e+00	0.00e+00	2.52e+01	0.00e+00	8.53e+02
Zn-65	2.32e+04	7.37e+04	3.33e+04	0.00e+00	4.93e+04	0.00e+00	4.64e+04
Zn-69	4.93e+01	9.43e+01	6.56e+00	0.00e+00	6.13e+01	0.00e+00	1.42e+01
Zn-69m	8.14e+02	1.95e+03	1.79e+02	0.00e+00	1.18e+03	0.00e+00	1.19e+05
Se-79	0.00e+00	1.07e+03	1.79e+02	0.00e+00	1.85e+03	0.00e+00	2.19e+02
Br-82	0.00e+00	0.00e+00	2.27e+03	0.00e+00	0.00e+00	0.00e+00	2.61e+03
Br-83	0.00e+00	0.00e+00	4.04e+01	0.00e+00	0.00e+00	0.00e+00	5.82e+01
Br-84	0.00e+00	0.00e+00	5.24e+01	0.00e+00	0.00e+00	0.00e+00	4.11e-04
Br-85	0.00e+00	0.00e+00	2.15e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.

Waterford Steam Electric Station Unit III

Discharge point : Circulating Water Discharge to Mississippi River

Dilution Factor DW = 220.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	1.01e+05	4.71e+04	0.00e+00	0.00e+00	0.00e+00	1.99e+04
Rb-87	0.00e+00	5.89e+04	2.05e+04	0.00e+00	0.00e+00	0.00e+00	2.76e+03
Rb-88	0.00e+00	2.90e+02	1.54e+02	0.00e+00	0.00e+00	0.00e+00	4.00e-09
Rb-89	0.00e+00	1.92e+02	1.35e+02	0.00e+00	0.00e+00	0.00e+00	1.12e-11
Sr-89	2.22e+04	0.00e+00	6.38e+02	0.00e+00	0.00e+00	0.00e+00	3.57e+03
Sr-90	6.29e+05	0.00e+00	1.26e+04	0.00e+00	0.00e+00	0.00e+00	1.58e+04
Sr-91	4.09e+02	0.00e+00	1.65e+01	0.00e+00	0.00e+00	0.00e+00	1.95e+03
Sr-92	1.55e+02	0.00e+00	6.71e+00	0.00e+00	0.00e+00	0.00e+00	3.08e+03
Y-90	5.79e-01	0.00e+00	1.55e-02	0.00e+00	0.00e+00	0.00e+00	6.14e+03
Y-91	8.49e+00	0.00e+00	2.27e-01	0.00e+00	0.00e+00	0.00e+00	4.67e+03
Y-91m	5.47e-03	0.00e+00	2.12e-04	0.00e+00	0.00e+00	0.00e+00	1.61e-02
Y-92	5.09e-02	0.00e+00	1.49e-03	0.00e+00	0.00e+00	0.00e+00	8.91e+02
Y-93	1.61e-01	0.00e+00	4.46e-03	0.00e+00	0.00e+00	0.00e+00	5.12e+03
Zr-93	3.46e-01	1.94e-02	9.02e-03	0.00e+00	7.34e-02	0.00e+00	2.01e+01
Zr-95	2.52e-01	8.07e-02	5.46e-02	0.00e+00	1.27e-01	0.00e+00	2.56e+02
Zr-97	1.39e-02	2.81e-03	1.28e-03	0.00e+00	4.24e-03	0.00e+00	8.69e+02
Nb-93m	1.83e+01	5.98e+00	1.47e+00	0.00e+00	6.88e+00	0.00e+00	2.76e+03
Nb-95	4.47e+00	2.49e+00	1.34e+00	0.00e+00	2.46e+00	0.00e+00	1.51e+04
Nb-97	3.75e-02	9.49e-03	3.46e-03	0.00e+00	1.11e-02	0.00e+00	3.50e+01
Mo-93	0.00e+00	1.83e+02	4.94e+00	0.00e+00	5.18e+01	0.00e+00	2.97e+01
Mo-99	0.00e+00	1.05e+02	1.99e+01	0.00e+00	2.37e+02	0.00e+00	2.43e+02
Tc-101	9.22e-03	1.33e-02	1.30e-01	0.00e+00	2.39e-01	6.79e-03	3.99e-14
Tc-99	4.54e+00	6.75e+00	1.82e+00	0.00e+00	8.49e+01	5.73e-01	2.21e+02
Tc-99m	8.96e-03	2.53e-02	3.23e-01	0.00e+00	3.85e-01	1.24e-02	1.50e+01
Ru-103	4.50e+00	0.00e+00	1.94e+00	0.00e+00	1.72e+01	0.00e+00	5.25e+02
Ru-105	3.75e-01	0.00e+00	1.48e-01	0.00e+00	4.84e+00	0.00e+00	2.29e+02
Ru-106	6.69e+01	0.00e+00	8.46e+00	0.00e+00	1.29e+02	0.00e+00	4.33e+03
Rh-105	2.94e+00	2.15e+00	1.42e+00	0.00e+00	9.14e+00	0.00e+00	3.43e+02
Pd-107	0.00e+00	3.57e+00	2.29e-01	0.00e+00	3.21e+01	0.00e+00	2.22e+01
Pd-109	0.00e+00	4.30e+00	9.70e-01	0.00e+00	2.46e+01	0.00e+00	4.77e+02

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station Unit III
 Discharge point :: Circulating Water Discharge to Mississippi River
 Dilution Factor DW = 220.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	9.42e-01	8.71e-01	5.17e-01	0.00e+00	1.71e+00	0.00e+00	3.55e+02
Ag-111	3.42e-01	1.43e-01	7.12e-02	0.00e+00	4.61e-01	0.00e+00	2.62e+02
Cd-113m	0.00e+00	1.52e+03	4.89e+01	0.00e+00	1.68e+03	0.00e+00	1.23e+04
Cd-115m	0.00e+00	8.82e+02	2.81e+01	0.00e+00	7.00e+02	0.00e+00	3.71e+04
Sn-123	2.23e+05	3.70e+03	5.45e+03	3.15e+03	0.00e+00	0.00e+00	4.55e+05
Sn-125	5.98e+04	1.21e+03	2.71e+03	9.98e+02	0.00e+00	0.00e+00	7.47e+05
Sn-126	6.07e+05	1.20e+04	1.72e+04	3.53e+03	0.00e+00	0.00e+00	1.75e+05
Sb-124	7.76e+00	1.47e-01	3.08e+00	1.88e-02	0.00e+00	6.04e+00	2.20e+02
Sb-125	4.96e+00	5.54e-02	1.18e+00	5.05e-03	0.00e+00	3.83e+00	5.46e+01
Sb-126	3.19e+00	6.49e-02	1.15e+00	1.95e-02	0.00e+00	1.95e+00	2.61e+02
Sb-127	7.15e-01	1.57e-02	2.74e-01	8.59e-03	0.00e+00	4.24e-01	1.64e+02
Te-125m	2.57e+03	9.30e+02	3.44e+02	7.72e+02	1.04e+04	0.00e+00	1.03e+04
Te-127	1.05e+02	3.78e+01	2.28e+01	7.81e+01	4.29e+02	0.00e+00	8.32e+03
Te-127m	6.49e+03	2.32e+03	7.90e+02	1.66e+03	2.63e+04	0.00e+00	2.17e+04
Te-129	3.01e+01	1.13e+01	7.33e+00	2.31e+01	1.26e+02	0.00e+00	2.27e+01
Te-129m	1.10e+04	4.11e+03	1.74e+03	3.78e+03	4.60e+04	0.00e+00	5.55e+04
Te-131	1.89e+01	7.88e+00	5.96e+00	1.55e+01	8.27e+01	0.00e+00	2.67e+00
Te-131m	1.66e+03	8.10e+02	6.75e+02	1.28e+03	8.21e+03	0.00e+00	8.05e+04
Te-132	2.41e+03	1.56e+03	1.47e+03	1.72e+03	1.50e+04	0.00e+00	7.39e+04
Te-133m	4.43e+01	2.59e+01	2.49e+01	3.75e+01	2.56e+02	0.00e+00	8.87e+00
Te-134	3.10e+01	2.03e+01	1.25e+01	2.71e+01	1.96e+02	0.00e+00	3.44e-02
I-129	1.19e+02	1.02e+02	3.34e+02	2.62e+05	2.19e+02	0.00e+00	1.61e+01
I-130	2.74e+01	8.09e+01	3.19e+01	6.86e+03	1.26e+02	0.00e+00	6.97e+01
I-131	1.51e+02	2.16e+02	1.24e+02	7.08e+04	3.70e+02	0.00e+00	5.70e+01
I-132	7.37e+00	1.97e+01	6.89e+00	6.89e+02	3.14e+01	0.00e+00	3.70e+00
I-133	5.15e+01	8.96e+01	2.73e+01	1.32e+04	1.56e+02	0.00e+00	8.06e+01
I-134	3.85e+00	1.05e+01	3.74e+00	1.81e+02	1.66e+01	0.00e+00	9.11e-03
I-135	1.61e+01	4.21e+01	1.55e+01	2.78e+03	6.75e+01	0.00e+00	4.75e+01
Cs-134	2.98e+05	7.09e+05	5.79e+05	0.00e+00	2.29e+05	7.61e+04	1.24e+04
Cs-134m	1.02e+02	2.15e+02	1.10e+02	0.00e+00	1.16e+02	1.83e+01	7.57e+01

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station Unit III
 Discharge point :: Circulating Water Discharge to Mississippi River
 Dilution Factor DW = 220.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	9.34e+04	8.62e+04	3.83e+04	0.00e+00	3.26e+04	9.77e+03	2.02e+03
Cs-136	3.12e+04	1.23e+05	8.86e+04	0.00e+00	6.85e+04	9.39e+03	1.40e+04
Cs-137	3.82e+05	5.22e+05	3.42e+05	0.00e+00	1.77e+05	5.89e+04	1.01e+04
Cs-138	2.64e+02	5.22e+02	2.59e+02	0.00e+00	3.84e+02	3.79e+01	2.23e-03
Cs-139	1.63e+02	2.43e+02	8.86e+01	0.00e+00	1.95e+02	1.77e+01	5.27e-21
Ba-139	9.66e-01	6.88e-04	2.83e-02	0.00e+00	6.43e-04	3.90e-04	1.71e+00
Ba-140	2.02e+02	2.54e-01	1.32e+01	0.00e+00	8.63e-02	1.45e-01	4.16e+02
Ba-141	4.69e-01	3.54e-04	1.58e-02	0.00e+00	3.29e-04	2.01e-04	2.21e-10
Ba-142	2.12e-01	2.18e-04	1.33e-02	0.00e+00	1.84e-04	1.23e-04	2.99e-19
La-140	1.51e-01	7.59e-02	2.01e-02	0.00e+00	0.00e+00	0.00e+00	5.57e+03
La-141	1.92e-02	5.96e-03	9.76e-04	0.00e+00	0.00e+00	0.00e+00	7.11e+02
La-142	7.71e-03	3.51e-03	8.73e-04	0.00e+00	0.00e+00	0.00e+00	2.56e+01
Ce-141	2.59e-02	1.75e-02	1.99e-03	0.00e+00	8.15e-03	0.00e+00	6.71e+01
Ce-143	4.57e-03	3.38e+00	3.74e-04	0.00e+00	1.49e-03	0.00e+00	1.26e+02
Ce-144	1.35e+00	5.66e-01	7.26e-02	0.00e+00	3.35e-01	0.00e+00	4.57e+02
Pr-143	5.54e-01	2.22e-01	2.75e-02	0.00e+00	1.28e-01	0.00e+00	2.43e+03
Pr-144	1.81e-03	7.53e-04	9.21e-05	0.00e+00	4.25e-04	0.00e+00	2.61e-10
Nd-147	3.79e-01	4.38e-01	2.62e-02	0.00e+00	2.56e-01	0.00e+00	2.10e+03
Pm-147	4.54e+00	4.27e-01	1.73e-01	0.00e+00	8.07e-01	0.00e+00	5.38e+02
Pm-148	4.32e-01	7.17e-02	3.61e-02	0.00e+00	1.36e-01	0.00e+00	5.63e+03
Pm-148m	1.85e+00	4.79e-01	3.66e-01	0.00e+00	7.23e-01	0.00e+00	4.06e+03
Pm-149	9.15e-02	1.29e-02	5.29e-03	0.00e+00	2.45e-02	0.00e+00	2.43e+03
Pm-151	4.20e-02	7.05e-03	3.56e-03	0.00e+00	1.26e-02	0.00e+00	1.94e+03
Sm-151	4.16e+00	7.17e-01	1.72e-01	0.00e+00	8.01e-01	0.00e+00	3.16e+02
Sm-153	5.16e-02	4.31e-02	3.14e-03	0.00e+00	1.39e-02	0.00e+00	1.54e+03
Eu-152	1.17e+01	2.67e+00	2.35e+00	0.00e+00	1.66e+01	0.00e+00	1.54e+03
Eu-154	3.70e+01	4.55e+00	3.24e+00	0.00e+00	2.18e+01	0.00e+00	3.30e+03
Eu-155	5.18e+00	7.35e-01	4.74e-01	0.00e+00	3.39e+00	0.00e+00	5.78e+02
Eu-156	8.25e-01	6.38e-01	1.03e-01	0.00e+00	4.26e-01	0.00e+00	4.37e+03
Tb-160	2.83e+00	0.00e+00	3.53e-01	0.00e+00	1.17e+00	0.00e+00	2.61e+03

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station Unit III
 Discharge point :: Circulating Water Discharge to Mississippi River
 Dilution Factor DW = 220.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	1.63e+01	5.08e+00	3.85e+00	0.00e+00	7.59e+00	0.00e+00	1.54e+03
W-181	2.85e+01	9.28e+00	9.94e-01	0.00e+00	0.00e+00	0.00e+00	1.06e+03
W-185	1.16e+03	3.88e+02	4.08e+01	0.00e+00	0.00e+00	0.00e+00	4.48e+04
W-187	2.96e+02	2.47e+02	8.65e+01	0.00e+00	0.00e+00	0.00e+00	8.10e+04
Pb-210	3.67e+06	1.05e+06	1.30e+05	0.00e+00	2.95e+06	0.00e+00	5.37e+02
Bi-210	1.67e+01	1.15e+02	9.58e+00	0.00e+00	1.39e+03	0.00e+00	1.72e+03
Po-210	4.26e+05	9.05e+05	1.03e+05	0.00e+00	3.02e+06	0.00e+00	7.62e+04
Ra-223	5.97e+05	9.19e+02	1.19e+05	0.00e+00	2.61e+04	0.00e+00	3.85e+04
Ra-224	1.93e+05	4.68e+02	3.88e+04	0.00e+00	1.32e+04	0.00e+00	4.08e+04
Ra-225	7.88e+05	9.34e+02	1.57e+05	0.00e+00	2.65e+04	0.00e+00	3.67e+04
Ra-226	3.63e+07	6.89e+02	2.64e+07	0.00e+00	1.96e+04	0.00e+00	3.99e+04
Ra-228	1.34e+07	3.75e+02	1.45e+07	0.00e+00	1.06e+04	0.00e+00	6.77e+03
Ac-225	2.65e+02	3.65e+02	1.78e+01	0.00e+00	4.16e+01	0.00e+00	2.45e+04
Ac-227	1.13e+05	1.49e+04	6.69e+03	0.00e+00	4.82e+03	0.00e+00	4.93e+03
Th-227	9.89e+02	1.79e+01	2.85e+01	0.00e+00	1.02e+02	0.00e+00	3.90e+04
Th-228	3.58e+04	6.06e+02	1.21e+03	0.00e+00	3.37e+03	0.00e+00	4.06e+04
Th-229	9.82e+05	2.81e+04	1.62e+04	0.00e+00	1.36e+05	0.00e+00	5.64e+03
Th-230	1.49e+05	8.45e+03	4.12e+03	0.00e+00	4.08e+04	0.00e+00	4.35e+03
Th-232	1.66e+05	7.22e+03	1.08e+02	0.00e+00	3.48e+04	0.00e+00	3.70e+03
Th-234	5.78e+00	3.40e-01	1.67e-01	0.00e+00	1.93e+00	0.00e+00	8.16e+03
Pa-231	1.10e+05	4.11e+03	4.25e+03	0.00e+00	2.31e+04	0.00e+00	1.92e+03
Pa-233	1.41e-01	2.83e-02	2.44e-02	0.00e+00	1.07e-01	0.00e+00	4.38e+02
U-232	2.13e+04	0.00e+00	1.52e+03	0.00e+00	2.31e+03	0.00e+00	3.50e+02
U-233	4.50e+03	0.00e+00	2.73e+02	0.00e+00	1.05e+03	0.00e+00	3.24e+02
U-234	4.32e+03	0.00e+00	2.67e+02	0.00e+00	1.03e+03	0.00e+00	3.17e+02
U-235	4.14e+03	0.00e+00	2.51e+02	0.00e+00	9.66e+02	0.00e+00	4.03e+02
U-236	4.14e+03	0.00e+00	2.56e+02	0.00e+00	9.87e+02	0.00e+00	2.98e+02
U-237	2.85e-01	0.00e+00	7.59e-02	0.00e+00	1.17e+00	0.00e+00	1.00e+02
U-238	3.96e+03	0.00e+00	2.35e+02	0.00e+00	9.04e+02	0.00e+00	2.84e+02
Np-237	3.06e+04	2.18e+03	1.35e+03	0.00e+00	1.00e+04	0.00e+00	1.93e+03

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station Unit III
 Discharge point: Circulating Water Discharge to Mississippi River
 Dilution Factor DW = 220.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	3.33e-01	8.97e-03	5.18e-03	0.00e+00	3.04e-02	0.00e+00	8.34e+02
Np-239	2.89e-02	2.85e-03	1.57e-03	0.00e+00	8.88e-03	0.00e+00	5.84e+02
Pu-238	5.52e+03	6.99e+02	1.50e+02	0.00e+00	6.41e+02	0.00e+00	6.39e+02
Pu-239	6.35e+03	7.63e+02	1.67e+02	0.00e+00	7.10e+02	0.00e+00	5.83e+02
Pu-240	6.34e+03	7.62e+02	1.67e+02	0.00e+00	7.09e+02	0.00e+00	5.94e+02
Pu-241	1.37e+02	6.52e+00	2.91e+00	0.00e+00	1.34e+01	0.00e+00	1.23e+01
Pu-242	5.88e+03	7.35e+02	1.61e+02	0.00e+00	6.84e+02	0.00e+00	5.72e+02
Pu-244	6.87e+03	8.42e+02	1.85e+02	0.00e+00	7.84e+02	0.00e+00	8.52e+02
Am-241	4.55e+04	4.25e+04	3.26e+03	0.00e+00	2.45e+04	0.00e+00	4.47e+03
Am-242m	4.58e+04	3.99e+04	3.27e+03	0.00e+00	2.44e+04	0.00e+00	5.63e+03
Am-243	4.54e+04	4.16e+04	3.19e+03	0.00e+00	2.40e+04	0.00e+00	5.24e+03
Cm-242	1.24e+03	1.32e+03	8.25e+01	0.00e+00	3.75e+02	0.00e+00	4.77e+03
Cm-243	3.61e+04	3.31e+04	2.26e+03	0.00e+00	1.05e+04	0.00e+00	4.70e+03
Cm-244	2.75e+04	2.57e+04	1.73e+03	0.00e+00	8.07e+03	0.00e+00	4.55e+03
Cm-245	5.65e+04	4.92e+04	3.47e+03	0.00e+00	1.62e+04	0.00e+00	4.24e+03
Cm-246	5.60e+04	4.91e+04	3.46e+03	0.00e+00	1.61e+04	0.00e+00	4.16e+03
Cm-247	5.46e+04	4.84e+04	3.41e+03	0.00e+00	1.59e+04	0.00e+00	5.47e+03
Cm-248	4.54e+05	3.99e+05	2.81e+04	0.00e+00	1.31e+05	0.00e+00	8.85e+04
Cf-252	1.57e+04	0.00e+00	3.79e+02	0.00e+00	0.00e+00	0.00e+00	1.73e+04

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

Ai factors for Adult age group by nuclide.
Waterford Steam Electric Station Unit III
Discharge point :: 40 Arpent Canal
Dilution Factor DW = 1.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.29e-01	1.29e-01	1.29e-01	1.29e-01	1.29e-01	1.29e-01
Be-10	1.52e+01	2.35e+00	3.80e-01	0.00e+00	1.78e+00	0.00e+00	1.28e+02
C-14	3.13e+04	6.26e+03	6.26e+03	6.26e+03	6.26e+03	6.26e+03	6.26e+03
N-13	3.00e+03	3.00e+03	3.00e+03	3.00e+03	3.00e+03	3.00e+03	3.00e+03
F-18	1.49e+01	0.00e+00	1.66e+00	0.00e+00	0.00e+00	0.00e+00	4.43e-01
Na-22	4.17e+03	4.17e+03	4.17e+03	4.17e+03	4.17e+03	4.17e+03	4.17e+03
Na-24	4.07e+02	4.07e+02	4.07e+02	4.07e+02	4.07e+02	4.07e+02	4.07e+02
P-32	4.62e+07	2.87e+06	1.79e+06	0.00e+00	0.00e+00	0.00e+00	5.19e+06
Ca-41	1.77e+04	0.00e+00	1.92e+03	0.00e+00	0.00e+00	0.00e+00	1.76e+01
Sc-46	2.64e-02	5.12e-02	1.49e-02	0.00e+00	4.78e-02	0.00e+00	2.49e+02
Cr-51	0.00e+00	0.00e+00	1.27e+00	7.61e-01	2.81e-01	1.69e+00	3.20e+02
Mn-54	0.00e+00	4.38e+03	8.35e+02	0.00e+00	1.30e+03	0.00e+00	1.34e+04
Mn-56	0.00e+00	1.10e+02	1.95e+01	0.00e+00	1.40e+02	0.00e+00	3.51e+03
Fe-55	6.58e+02	4.55e+02	1.06e+02	0.00e+00	0.00e+00	2.54e+02	2.61e+02
Fe-59	1.04e+03	2.44e+03	9.36e+02	0.00e+00	0.00e+00	6.82e+02	8.14e+03
Co-57	0.00e+00	2.09e+01	3.48e+01	0.00e+00	0.00e+00	0.00e+00	5.31e+02
Co-58	0.00e+00	8.92e+01	2.00e+02	0.00e+00	0.00e+00	0.00e+00	1.81e+03
Co-60	0.00e+00	2.56e+02	5.65e+02	0.00e+00	0.00e+00	0.00e+00	4.81e+03
Ni-59	2.34e+03	8.02e+02	3.90e+02	0.00e+00	0.00e+00	0.00e+00	1.65e+02
Ni-63	3.11e+04	2.16e+03	1.04e+03	0.00e+00	0.00e+00	0.00e+00	4.50e+02
Ni-65	1.26e+02	1.64e+01	7.49e+00	0.00e+00	0.00e+00	0.00e+00	4.17e+02
Cu-64	0.00e+00	9.97e+00	4.68e+00	0.00e+00	2.51e+01	0.00e+00	8.50e+02
Zn-65	2.32e+04	7.37e+04	3.33e+04	0.00e+00	4.93e+04	0.00e+00	4.64e+04
Zn-69	4.93e+01	9.43e+01	6.56e+00	0.00e+00	6.13e+01	0.00e+00	1.42e+01
Zn-69m	8.14e+02	1.95e+03	1.79e+02	0.00e+00	1.18e+03	0.00e+00	1.19e+05
Se-79	0.00e+00	1.07e+03	1.79e+02	0.00e+00	1.85e+03	0.00e+00	2.19e+02
Br-82	0.00e+00	0.00e+00	2.27e+03	0.00e+00	0.00e+00	0.00e+00	2.60e+03
Br-83	0.00e+00	0.00e+00	4.04e+01	0.00e+00	0.00e+00	0.00e+00	5.82e+01
Br-84	0.00e+00	0.00e+00	5.24e+01	0.00e+00	0.00e+00	0.00e+00	4.11e-04
Br-85	0.00e+00	0.00e+00	2.15e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

Ai factors for Adult age group by nuclide.
Waterford Steam Electric Station Unit III
Discharge point: 40 Arpent Canal
Dilution Factor DW = 1.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	1.01e+05	4.71e+04	0.00e+00	0.00e+00	0.00e+00	1.99e+04
Rb-87	0.00e+00	5.89e+04	2.05e+04	0.00e+00	0.00e+00	0.00e+00	2.76e+03
Rb-88	0.00e+00	2.90e+02	1.54e+02	0.00e+00	0.00e+00	0.00e+00	4.00e-09
Rb-89	0.00e+00	1.92e+02	1.35e+02	0.00e+00	0.00e+00	0.00e+00	1.12e-11
Sr-89	2.21e+04	0.00e+00	6.35e+02	0.00e+00	0.00e+00	0.00e+00	3.55e+03
Sr-90	6.26e+05	0.00e+00	1.26e+04	0.00e+00	0.00e+00	0.00e+00	1.57e+04
Sr-91	4.07e+02	0.00e+00	1.64e+01	0.00e+00	0.00e+00	0.00e+00	1.94e+03
Sr-92	1.54e+02	0.00e+00	6.68e+00	0.00e+00	0.00e+00	0.00e+00	3.06e+03
Y-90	5.76e-01	0.00e+00	1.54e-02	0.00e+00	0.00e+00	0.00e+00	6.10e+03
Y-91	8.44e+00	0.00e+00	2.26e-01	0.00e+00	0.00e+00	0.00e+00	4.64e+03
Y-91m	5.44e-03	0.00e+00	2.11e-04	0.00e+00	0.00e+00	0.00e+00	1.60e-02
Y-92	5.06e-02	0.00e+00	1.48e-03	0.00e+00	0.00e+00	0.00e+00	8.86e+02
Y-93	1.60e-01	0.00e+00	4.43e-03	0.00e+00	0.00e+00	0.00e+00	5.09e+03
Zr-93	3.30e-01	1.85e-02	8.61e-03	0.00e+00	7.01e-02	0.00e+00	1.92e+01
Zr-95	2.40e-01	7.70e-02	5.21e-02	0.00e+00	1.21e-01	0.00e+00	2.44e+02
Zr-97	1.33e-02	2.68e-03	1.22e-03	0.00e+00	4.04e-03	0.00e+00	8.30e+02
Nb-93m	1.83e+01	5.98e+00	1.47e+00	0.00e+00	6.87e+00	0.00e+00	2.76e+03
Nb-95	4.47e+00	2.48e+00	1.34e+00	0.00e+00	2.46e+00	0.00e+00	1.51e+04
Nb-97	3.75e-02	9.48e-03	3.46e-03	0.00e+00	1.11e-02	0.00e+00	3.50e+01
Mo-93	0.00e+00	1.80e+02	4.86e+00	0.00e+00	5.10e+01	0.00e+00	2.92e+01
Mo-99	0.00e+00	1.03e+02	1.96e+01	0.00e+00	2.34e+02	0.00e+00	2.39e+02
Tc-101	9.12e-03	1.31e-02	1.29e-01	0.00e+00	2.37e-01	6.72e-03	3.95e-14
Tc-99	4.49e+00	6.68e+00	1.80e+00	0.00e+00	8.40e+01	5.67e-01	2.18e+02
Tc-99m	8.87e-03	2.51e-02	3.19e-01	0.00e+00	3.81e-01	1.23e-02	1.48e+01
Ru-103	4.43e+00	0.00e+00	1.91e+00	0.00e+00	1.69e+01	0.00e+00	5.17e+02
Ru-105	3.69e-01	0.00e+00	1.46e-01	0.00e+00	4.76e+00	0.00e+00	2.26e+02
Ru-106	6.58e+01	0.00e+00	8.33e+00	0.00e+00	1.27e+02	0.00e+00	4.26e+03
Rh-105	2.90e+00	2.12e+00	1.40e+00	0.00e+00	9.00e+00	0.00e+00	3.38e+02
Pd-107	0.00e+00	3.52e+00	2.25e-01	0.00e+00	3.16e+01	0.00e+00	2.18e+01
Pd-109	0.00e+00	4.24e+00	9.55e-01	0.00e+00	2.42e+01	0.00e+00	4.69e+02

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station Unit III
 Discharge point--: 40 Arpent Canal
 Dilution Factor DW = 1.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	8.81e-01	8.15e-01	4.84e-01	0.00e+00	1.60e+00	0.00e+00	3.33e+02
Ag-111	3.20e-01	1.34e-01	6.66e-02	0.00e+00	4.32e-01	0.00e+00	2.46e+02
Cd-113m	0.00e+00	1.52e+03	4.88e+01	0.00e+00	1.68e+03	0.00e+00	1.23e+04
Cd-115m	0.00e+00	8.81e+02	2.81e+01	0.00e+00	6.99e+02	0.00e+00	3.71e+04
Sn-123	2.23e+05	3.70e+03	5.45e+03	3.15e+03	0.00e+00	0.00e+00	4.55e+05
Sn-125	5.98e+04	1.21e+03	2.71e+03	9.98e+02	0.00e+00	0.00e+00	7.47e+05
Sn-126	6.07e+05	1.20e+04	1.72e+04	3.53e+03	0.00e+00	0.00e+00	1.75e+05
Sb-124	6.70e+00	1.27e-01	2.66e+00	1.63e-02	0.00e+00	5.22e+00	1.90e+02
Sb-125	4.29e+00	4.79e-02	1.02e+00	4.36e-03	0.00e+00	3.30e+00	4.72e+01
Sb-126	2.75e+00	5.60e-02	9.94e-01	1.69e-02	0.00e+00	1.69e+00	2.25e+02
Sb-127	6.18e-01	1.35e-02	2.37e-01	7.42e-03	0.00e+00	3.66e-01	1.41e+02
Te-125m	2.57e+03	9.30e+02	3.44e+02	7.72e+02	1.04e+04	0.00e+00	1.02e+04
Te-127	1.05e+02	3.78e+01	2.28e+01	7.80e+01	4.29e+02	0.00e+00	8.31e+03
Te-127m	6.48e+03	2.32e+03	7.90e+02	1.66e+03	2.63e+04	0.00e+00	2.17e+04
Te-129	3.01e+01	1.13e+01	7.33e+00	2.31e+01	1.26e+02	0.00e+00	2.27e+01
Te-129m	1.10e+04	4.11e+03	1.74e+03	3.78e+03	4.60e+04	0.00e+00	5.54e+04
Te-131	1.89e+01	7.88e+00	5.96e+00	1.55e+01	8.26e+01	0.00e+00	2.67e+00
Te-131m	1.66e+03	8.10e+02	6.75e+02	1.28e+03	8.21e+03	0.00e+00	8.04e+04
Te-132	2.41e+03	1.56e+03	1.47e+03	1.72e+03	1.50e+04	0.00e+00	7.38e+04
Te-133m	4.42e+01	2.59e+01	2.49e+01	3.74e+01	2.56e+02	0.00e+00	8.87e+00
Te-134	3.10e+01	2.03e+01	1.24e+01	2.71e+01	1.96e+02	0.00e+00	3.44e-02
I-129	1.17e+02	1.01e+02	3.31e+02	2.60e+05	2.17e+02	0.00e+00	1.59e+01
I-130	2.71e+01	8.01e+01	3.16e+01	6.79e+03	1.25e+02	0.00e+00	6.89e+01
I-131	1.49e+02	2.14e+02	1.22e+02	7.00e+04	3.66e+02	0.00e+00	5.64e+01
I-132	7.29e+00	1.95e+01	6.82e+00	6.82e+02	3.11e+01	0.00e+00	3.66e+00
I-133	5.10e+01	8.87e+01	2.70e+01	1.30e+04	1.55e+02	0.00e+00	7.97e+01
I-134	3.81e+00	1.03e+01	3.70e+00	1.79e+02	1.64e+01	0.00e+00	9.01e-03
I-135	1.59e+01	4.17e+01	1.54e+01	2.75e+03	6.68e+01	0.00e+00	4.70e+01
Cs-134	2.98e+05	7.09e+05	5.79e+05	0.00e+00	2.29e+05	7.61e+04	1.24e+04
Cs-134m	1.02e+02	2.15e+02	1.10e+02	0.00e+00	1.16e+02	1.83e+01	7.57e+01

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

Ai factors for Adult age group by nuclide.
Waterford Steam Electric Station Unit III
Discharge point : 40-Arpent Canal
Dilution Factor DW = 1.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	9.34e+04	8.62e+04	3.83e+04	0.00e+00	3.26e+04	9.77e+03	2.02e+03
Cs-136	3.12e+04	1.23e+05	8.86e+04	0.00e+00	6.85e+04	9.38e+03	1.40e+04
Cs-137	3.82e+05	5.22e+05	3.42e+05	0.00e+00	1.77e+05	5.89e+04	1.01e+04
Cs-138	2.64e+02	5.22e+02	2.59e+02	0.00e+00	3.84e+02	3.79e+01	2.23e-03
Cs-139	1.63e+02	2.43e+02	8.86e+01	0.00e+00	1.95e+02	1.77e+01	5.27e-21
Ba-139	9.29e-01	6.62e-04	2.72e-02	0.00e+00	6.19e-04	3.75e-04	1.65e+00
Ba-140	1.94e+02	2.44e-01	1.27e+01	0.00e+00	8.30e-02	1.40e-01	4.00e+02
Ba-141	4.51e-01	3.41e-04	1.52e-02	0.00e+00	3.17e-04	1.93e-04	2.13e-10
Ba-142	2.04e-01	2.10e-04	1.28e-02	0.00e+00	1.77e-04	1.19e-04	2.87e-19
La-140	1.50e-01	7.54e-02	1.99e-02	0.00e+00	0.00e+00	0.00e+00	5.54e+03
La-141	1.91e-02	5.93e-03	9.70e-04	0.00e+00	0.00e+00	0.00e+00	7.06e+02
La-142	7.66e-03	3.48e-03	8.68e-04	0.00e+00	0.00e+00	0.00e+00	2.54e+01
Ce-141	2.24e-02	1.52e-02	1.72e-03	0.00e+00	7.04e-03	0.00e+00	5.79e+01
Ce-143	3.95e-03	2.92e+00	3.23e-04	0.00e+00	1.29e-03	0.00e+00	1.09e+02
Ce-144	1.17e+00	4.88e-01	6.27e-02	0.00e+00	2.90e-01	0.00e+00	3.95e+02
Pr-143	5.51e-01	2.21e-01	2.73e-02	0.00e+00	1.27e-01	0.00e+00	2.41e+03
Pr-144	1.80e-03	7.48e-04	9.16e-05	0.00e+00	4.22e-04	0.00e+00	2.59e-10
Nd-147	3.76e-01	4.35e-01	2.60e-02	0.00e+00	2.54e-01	0.00e+00	2.09e+03
Pm-147	4.51e+00	4.24e-01	1.72e-01	0.00e+00	8.02e-01	0.00e+00	5.34e+02
Pm-148	4.29e-01	7.12e-02	3.59e-02	0.00e+00	1.35e-01	0.00e+00	5.60e+03
Pm-148m	1.84e+00	4.76e-01	3.64e-01	0.00e+00	7.18e-01	0.00e+00	4.03e+03
Pm-149	9.10e-02	1.29e-02	5.25e-03	0.00e+00	2.43e-02	0.00e+00	2.41e+03
Pm-151	4.17e-02	7.00e-03	3.54e-03	0.00e+00	1.25e-02	0.00e+00	1.93e+03
Sm-151	4.13e+00	7.12e-01	1.71e-01	0.00e+00	7.96e-01	0.00e+00	3.14e+02
Sm-153	5.13e-02	4.28e-02	3.12e-03	0.00e+00	1.38e-02	0.00e+00	1.53e+03
Eu-152	1.17e+01	2.66e+00	2.33e+00	0.00e+00	1.65e+01	0.00e+00	1.53e+03
Eu-154	3.68e+01	4.52e+00	3.22e+00	0.00e+00	2.17e+01	0.00e+00	3.28e+03
Eu-155	5.15e+00	7.30e-01	4.71e-01	0.00e+00	3.37e+00	0.00e+00	5.75e+02
Eu-156	8.20e-01	6.34e-01	1.02e-01	0.00e+00	4.24e-01	0.00e+00	4.35e+03
Tb-160	2.81e+00	0.00e+00	3.51e-01	0.00e+00	1.16e+00	0.00e+00	2.59e+03

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

Ai factors for Adult age group by nuclide.
Waterford Steam Electric Station Unit III
Discharge point : 40-Arpent Canal
Dilution Factor DW = 1.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	1.62e+01	5.05e+00	3.83e+00	0.00e+00	7.54e+00	0.00e+00	1.53e+03
W-181	2.85e+01	9.28e+00	9.94e-01	0.00e+00	0.00e+00	0.00e+00	1.06e+03
W-185	1.16e+03	3.88e+02	4.08e+01	0.00e+00	0.00e+00	0.00e+00	4.48e+04
W-187	2.96e+02	2.47e+02	8.65e+01	0.00e+00	0.00e+00	0.00e+00	8.10e+04
Pb-210	3.66e+06	1.05e+06	1.30e+05	0.00e+00	2.94e+06	0.00e+00	5.36e+02
Bi-210	1.66e+01	1.14e+02	9.48e+00	0.00e+00	1.38e+03	0.00e+00	1.71e+03
Po-210	4.26e+05	9.05e+05	1.03e+05	0.00e+00	3.02e+06	0.00e+00	7.61e+04
Ra-223	5.95e+05	9.16e+02	1.19e+05	0.00e+00	2.60e+04	0.00e+00	3.84e+04
Ra-224	1.93e+05	4.67e+02	3.87e+04	0.00e+00	1.32e+04	0.00e+00	4.07e+04
Ra-225	7.85e+05	9.31e+02	1.57e+05	0.00e+00	2.65e+04	0.00e+00	3.66e+04
Ra-226	3.61e+07	6.87e+02	2.63e+07	0.00e+00	1.95e+04	0.00e+00	3.97e+04
Ra-228	1.34e+07	3.73e+02	1.45e+07	0.00e+00	1.06e+04	0.00e+00	6.75e+03
Ac-225	2.63e+02	3.63e+02	1.77e+01	0.00e+00	4.13e+01	0.00e+00	2.44e+04
Ac-227	1.12e+05	1.48e+04	6.64e+03	0.00e+00	4.79e+03	0.00e+00	4.90e+03
Th-227	9.84e+02	1.78e+01	2.84e+01	0.00e+00	1.01e+02	0.00e+00	3.88e+04
Th-228	3.56e+04	6.03e+02	1.21e+03	0.00e+00	3.35e+03	0.00e+00	4.04e+04
Th-229	9.77e+05	2.79e+04	1.62e+04	0.00e+00	1.35e+05	0.00e+00	5.61e+03
Th-230	1.48e+05	8.40e+03	4.09e+03	0.00e+00	4.06e+04	0.00e+00	4.32e+03
Th-232	1.65e+05	7.18e+03	1.08e+02	0.00e+00	3.46e+04	0.00e+00	3.68e+03
Th-234	5.75e+00	3.38e-01	1.66e-01	0.00e+00	1.92e+00	0.00e+00	8.12e+03
Pa-231	1.08e+05	4.06e+03	4.19e+03	0.00e+00	2.28e+04	0.00e+00	1.89e+03
Pa-233	1.39e-01	2.79e-02	2.40e-02	0.00e+00	1.05e-01	0.00e+00	4.32e+02
U-232	1.98e+04	0.00e+00	1.41e+03	0.00e+00	2.14e+03	0.00e+00	3.25e+02
U-233	4.17e+03	0.00e+00	2.53e+02	0.00e+00	9.72e+02	0.00e+00	3.00e+02
U-234	4.00e+03	0.00e+00	2.48e+02	0.00e+00	9.53e+02	0.00e+00	2.94e+02
U-235	3.84e+03	0.00e+00	2.33e+02	0.00e+00	8.95e+02	0.00e+00	3.74e+02
U-236	3.84e+03	0.00e+00	2.37e+02	0.00e+00	9.15e+02	0.00e+00	2.76e+02
U-237	2.64e-01	0.00e+00	7.04e-02	0.00e+00	1.09e+00	0.00e+00	9.29e+01
U-238	3.67e+03	0.00e+00	2.17e+02	0.00e+00	8.38e+02	0.00e+00	2.63e+02
Np-237	3.02e+04	2.15e+03	1.33e+03	0.00e+00	9.86e+03	0.00e+00	1.90e+03

Conversion factors are in units of mrem/hr per uCi/ml.

SITE RELATED LIQUID INGESTION DOSE COMMITMENT FACTORS (A_i) FOR INDIVIDUAL NUCLIDES

A_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station Unit III
 Discharge point : 40- Arpent Canal
 Dilution Factor DW = 1.0

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	3.28e-01	8.83e-03	5.10e-03	0.00e+00	2.99e-02	0.00e+00	8.21e+02
Np-239	2.85e-02	2.80e-03	1.54e-03	0.00e+00	8.74e-03	0.00e+00	5.75e+02
Pu-238	5.28e+03	6.69e+02	1.43e+02	0.00e+00	6.13e+02	0.00e+00	6.12e+02
Pu-239	6.07e+03	7.30e+02	1.60e+02	0.00e+00	6.80e+02	0.00e+00	5.58e+02
Pu-240	6.07e+03	7.29e+02	1.60e+02	0.00e+00	6.79e+02	0.00e+00	5.68e+02
Pu-241	1.32e+02	6.24e+00	2.78e+00	0.00e+00	1.28e+01	0.00e+00	1.17e+01
Pu-242	5.63e+03	7.03e+02	1.54e+02	0.00e+00	6.54e+02	0.00e+00	5.47e+02
Pu-244	6.57e+03	8.05e+02	1.77e+02	0.00e+00	7.50e+02	0.00e+00	8.15e+02
Am-241	4.52e+04	4.22e+04	3.24e+03	0.00e+00	2.44e+04	0.00e+00	4.44e+03
Am-242m	4.55e+04	3.97e+04	3.25e+03	0.00e+00	2.42e+04	0.00e+00	5.59e+03
Am-243	4.51e+04	4.13e+04	3.17e+03	0.00e+00	2.39e+04	0.00e+00	5.21e+03
Cm-242	1.23e+03	1.31e+03	8.20e+01	0.00e+00	3.72e+02	0.00e+00	4.74e+03
Cm-243	3.59e+04	3.29e+04	2.24e+03	0.00e+00	1.05e+04	0.00e+00	4.67e+03
Cm-244	2.73e+04	2.56e+04	1.72e+03	0.00e+00	8.02e+03	0.00e+00	4.52e+03
Cm-245	5.61e+04	4.89e+04	3.45e+03	0.00e+00	1.61e+04	0.00e+00	4.21e+03
Cm-246	5.57e+04	4.88e+04	3.44e+03	0.00e+00	1.60e+04	0.00e+00	4.14e+03
Cm-247	5.43e+04	4.81e+04	3.39e+03	0.00e+00	1.58e+04	0.00e+00	5.44e+03
Cm-248	4.51e+05	3.97e+05	2.79e+04	0.00e+00	1.30e+05	0.00e+00	8.80e+04
Cf-252	1.56e+04	0.00e+00	3.76e+02	0.00e+00	0.00e+00	0.00e+00	1.72e+04

Conversion factors are in units of mrem/hr per uCi/ml.

DOSE FACTORS FOR EXPOSURE TO A SEMI-INFINITE CLOUD OF NOBLE GASES

Nuclide	(N _i) β-air*	(L _i) β-Skin**	(M _i) γ-air*	(K _i) γ-Body**	
Kr-83m	2.88E+02	—	1.93E+01	7.56E+02 E-02	2
Kr-85m	1.97E+03	1.46E+03	1.23E+03	1.17E+03	
Kr-85	1.95E+03	1.34E+03	1.72E+01	1.61E+01	
Kr-87	1.03E+04	9.73E+03	6.17E+03	5.92E+03	
Kr-88	2.93E+03	2.37E+03	1.52E+04	1.47E+04	
Kr-89	1.06E+04	1.01E+02 E+04	1.73E+04	1.66E+04	
Kr-90	7.83E+03	7.29E+03	1.63E+04	1.56E+01 E+04	
Xe-131m	1.11E+03	4.76E+04 E+02	1.56E+02	9.15E+02 E+01	2
Xe-133m	1.48E+03	9.94E+04 E+02	3.27E+02	2.51E+02	
Xe-133	1.05E+03	3.06E+04 E+02	3.53E+02	2.94E+02	
Xe-135m	7.39E+04 E+02	7.11E+04 E+02	3.36E+03	3.12E+03	
Xe-135	2.46E+03	1.86E+03	1.92E+03	1.81E+03	
Xe-137	1.27E+02 E+04	1.22E+02 E+04	1.51E+03	1.42E+03	2
Xe-138	4.75E+03	4.13E+03	9.21E+03	8.83E+03	
Ar-41	3.28E+03	2.69E+03	9.30E+03	8.84E+03	

$$* \frac{\text{mrad} - \text{m}^3}{\mu\text{Ci} - \text{yr}}$$

$$** \frac{\text{mrem} - \text{m}^3}{\mu\text{Ci} - \text{yr}}$$

Extracted from Table B-1 of Regulatory Guide 1.109, Revision 1, 1977
multiplied by 1E6 pCi/μCi.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	7.18e+02	7.18e+02	7.18e+02	7.18e+02	7.18e+02	7.18e+02
Be-10	1.58e+06	2.45e+05	3.97e+04	0.00e+00	0.00e+00	1.78e+06	1.34e+05
C-14	1.82e+04	3.41e+03	3.41e+03	3.41e+03	3.41e+03	3.41e+03	3.41e+03
N-13	5.02e+01	5.02e+01	5.02e+01	5.02e+01	5.02e+01	5.02e+01	5.02e+01
F-18	3.77e+03	0.00e+00	4.15e+02	0.00e+00	0.00e+00	0.00e+00	7.39e+01
Na-22	1.04e+05	1.04e+05	1.04e+05	1.04e+05	1.04e+05	1.04e+05	1.04e+05
Na-24	1.02e+04	1.02e+04	1.02e+04	1.02e+04	1.02e+04	1.02e+04	1.02e+04
P-32	1.32e+06	7.71e+04	5.01e+04	0.00e+00	0.00e+00	0.00e+00	8.64e+04
Ca-41	3.06e+05	0.00e+00	3.30e+04	0.00e+00	0.00e+00	3.06e+04	2.29e+03
Sc-46	4.41e+05	8.56e+05	2.49e+05	0.00e+00	7.99e+05	0.00e+00	2.58e+05
Cr-51	0.00e+00	0.00e+00	1.00e+02	5.95e+01	2.28e+01	1.44e+04	3.32e+03
Mn-54	0.00e+00	3.96e+04	6.30e+03	0.00e+00	9.84e+03	1.40e+06	7.74e+04
Mn-56	0.00e+00	1.24e+00	1.83e-01	0.00e+00	1.30e+00	9.44e+03	2.02e+04
Fe-55	2.46e+04	1.70e+04	3.94e+03	0.00e+00	0.00e+00	7.21e+04	6.03e+03
Fe-59	1.18e+04	2.78e+04	1.06e+04	0.00e+00	0.00e+00	1.02e+06	1.88e+05
Co-57	0.00e+00	6.92e+02	6.71e+02	0.00e+00	0.00e+00	3.70e+05	3.14e+04
Co-58	0.00e+00	1.58e+03	2.07e+03	0.00e+00	0.00e+00	9.28e+05	1.06e+05
Co-60	0.00e+00	1.15e+04	1.48e+04	0.00e+00	0.00e+00	5.97e+06	2.85e+05
Ni-59	3.25e+04	1.17e+04	5.42e+03	0.00e+00	0.00e+00	6.56e+04	4.89e+03
Ni-63	4.32e+05	3.14e+04	1.45e+04	0.00e+00	0.00e+00	1.78e+05	1.34e+04
Ni-65	1.54e+00	2.10e-01	9.12e-02	0.00e+00	0.00e+00	5.60e+03	1.23e+04
Cu-64	0.00e+00	1.46e+00	6.15e-01	0.00e+00	4.62e+00	6.78e+03	4.90e+04
Zn-65	3.24e+04	1.03e+05	4.66e+04	0.00e+00	6.90e+04	8.64e+05	5.34e+04
Zn-69	3.38e-02	6.51e-02	4.52e-03	0.00e+00	4.22e-02	9.20e+02	1.63e+01
Zn-69m	8.16e+00	1.96e+01	1.79e+00	0.00e+00	1.18e+01	1.90e+04	1.37e+05
Se-79	0.00e+00	3.06e+03	4.87e+02	0.00e+00	4.55e+03	3.58e+05	2.66e+04
Br-82	0.00e+00	0.00e+00	1.35e+04	0.00e+00	0.00e+00	0.00e+00	1.04e+04
Br-83	0.00e+00	0.00e+00	2.41e+02	0.00e+00	0.00e+00	0.00e+00	2.32e+02
Br-84	0.00e+00	0.00e+00	3.13e+02	0.00e+00	0.00e+00	0.00e+00	1.64e-03
Br-85	0.00e+00	0.00e+00	1.28e+01	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	1.35e+05	5.90e+04	0.00e+00	0.00e+00	0.00e+00	1.66e+04
Rb-87	0.00e+00	7.89e+04	2.57e+04	0.00e+00	0.00e+00	0.00e+00	2.30e+03
Rb-88	0.00e+00	3.87e+02	1.93e+02	0.00e+00	0.00e+00	0.00e+00	3.34e-09
Rb-89	0.00e+00	2.56e+02	1.70e+02	0.00e+00	0.00e+00	0.00e+00	9.28e-12
Sr-89	3.04e+05	0.00e+00	8.72e+03	0.00e+00	0.00e+00	1.40e+06	3.50e+05
Sr-90	2.87e+07	0.00e+00	5.77e+05	0.00e+00	0.00e+00	9.60e+06	7.22e+05
Sr-91	6.19e+01	0.00e+00	2.50e+00	0.00e+00	0.00e+00	3.65e+04	1.91e+05
Sr-92	6.74e+00	0.00e+00	2.91e-01	0.00e+00	0.00e+00	1.65e+04	4.30e+04
Y-90	2.09e+03	0.00e+00	5.61e+01	0.00e+00	0.00e+00	1.70e+05	5.06e+05
Y-91	4.62e+05	0.00e+00	1.24e+04	0.00e+00	0.00e+00	1.70e+06	3.85e+05
Y-91m	2.61e-01	0.00e+00	1.02e-02	0.00e+00	0.00e+00	1.92e+03	1.33e+00
Y-92	1.03e+01	0.00e+00	3.02e-01	0.00e+00	0.00e+00	1.57e+04	7.35e+04
Y-93	9.44e+01	0.00e+00	2.61e+00	0.00e+00	0.00e+00	4.85e+04	4.22e+05
Zr-93	4.18e+05	2.34e+04	1.10e+04	0.00e+00	8.88e+04	1.70e+05	1.21e+04
Zr-95	1.07e+05	3.44e+04	2.33e+04	0.00e+00	5.42e+04	1.77e+06	1.50e+05
Zr-97	9.68e+01	1.96e+01	9.04e+00	0.00e+00	2.97e+01	7.87e+04	5.23e+05
Nb-93m	2.48e+05	8.08e+04	1.99e+04	0.00e+00	9.28e+04	2.49e+05	1.90e+04
Nb-95	1.41e+04	7.82e+03	4.21e+03	0.00e+00	7.74e+03	5.05e+05	1.04e+05
Nb-97	2.22e-01	5.62e-02	2.05e-02	0.00e+00	6.54e-02	2.40e+03	2.42e+02
Mo-93	0.00e+00	9.36e+03	2.54e+02	0.00e+00	2.84e+03	4.09e+05	3.03e+04
Mo-99	0.00e+00	1.21e+02	2.30e+01	0.00e+00	2.91e+02	9.12e+04	2.48e+05
Tc-101	4.18e-05	6.02e-05	5.90e-04	0.00e+00	1.08e-03	3.99e+02	1.09e-11
Tc-99	2.50e+02	3.71e+02	1.00e+02	0.00e+00	4.68e+03	8.08e+05	6.03e+04
Tc-99m	1.03e-03	2.91e-03	3.70e-02	0.00e+00	4.42e-02	7.64e+02	4.16e+03
Ru-103	1.53e+03	0.00e+00	6.58e+02	0.00e+00	5.83e+03	5.05e+05	1.10e+05
Ru-105	7.90e-01	0.00e+00	3.11e-01	0.00e+00	1.02e+00	1.10e+04	4.82e+04
Ru-106	6.91e+04	0.00e+00	8.72e+03	0.00e+00	1.34e+05	9.36e+06	9.12e+05
Rh-105	7.39e+00	5.38e+00	3.54e+00	0.00e+00	2.29e+01	1.93e+04	8.72e+04
Pd-107	0.00e+00	6.62e+02	4.70e+01	0.00e+00	5.26e+03	7.58e+04	5.65e+03
Pd-109	0.00e+00	3.70e+00	9.28e-01	0.00e+00	1.88e+01	1.48e+04	1.22e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	1.08e+04	1.00e+04	5.94e+03	0.00e+00	1.97e+04	4.63e+06	3.02e+05
Ag-111	3.40e+02	1.42e+02	7.10e+01	0.00e+00	4.59e+02	1.86e+05	2.23e+05
Cd-113m	0.00e+00	1.23e+06	3.98e+04	0.00e+00	1.37e+06	1.66e+06	1.27e+05
Cd-115m	0.00e+00	1.97e+05	6.36e+03	0.00e+00	1.58e+05	1.41e+06	3.84e+05
Sn-123	2.42e+05	5.34e+03	7.86e+03	4.54e+03	0.00e+00	2.30e+06	3.14e+05
Sn-125	9.28e+03	2.50e+02	5.62e+02	2.07e+02	0.00e+00	5.90e+05	5.45e+05
Sn-126	1.26e+06	3.34e+04	4.80e+04	9.84e+03	0.00e+00	9.36e+06	1.27e+05
Sb-124	3.12e+04	5.89e+02	1.24e+04	7.55e+01	0.00e+00	2.48e+06	4.06e+05
Sb-125	5.34e+04	5.95e+02	1.26e+04	5.40e+01	0.00e+00	1.74e+06	1.01e+05
Sb-126	3.60e+03	7.30e+01	1.30e+03	2.20e+01	0.00e+00	7.66e+05	4.81e+05
Sb-127	2.64e+02	5.78e+00	1.02e+02	3.18e+00	0.00e+00	1.64e+05	3.02e+05
Te-125m	3.42e+03	1.58e+03	4.67e+02	1.05e+03	1.24e+04	3.14e+05	7.06e+04
Te-127	1.40e+00	6.42e-01	3.10e-01	1.06e+00	5.10e+00	6.51e+03	5.74e+04
Te-127m	1.26e+04	5.77e+03	1.57e+03	3.29e+03	4.58e+04	9.60e+05	1.50e+05
Te-129	4.98e-02	2.39e-02	1.24e-02	3.90e-02	1.87e-01	1.94e+03	1.57e+02
Te-129m	9.76e+03	4.67e+03	1.58e+03	3.44e+03	3.66e+04	1.16e+06	3.83e+05
Te-131	1.11e-02	5.95e-03	3.59e-03	9.36e-03	4.37e-02	1.39e+03	1.84e+01
Te-131m	6.99e+01	4.36e+01	2.90e+01	5.50e+01	3.09e+02	1.46e+05	5.56e+05
Te-132	2.60e+02	2.15e+02	1.62e+02	1.90e+02	1.46e+03	2.88e+05	5.10e+05
Te-133m	5.79e-02	4.32e-02	3.34e-02	5.02e-02	2.99e-01	4.41e+03	6.12e+01
Te-134	3.07e-02	2.58e-02	1.26e-02	2.75e-02	1.74e-01	3.47e+03	2.38e-01
I-129	1.98e+04	1.69e+04	5.53e+04	4.43e+07	3.62e+04	0.00e+00	1.78e+03
I-130	4.58e+03	1.34e+04	5.28e+03	1.14e+06	2.09e+04	0.00e+00	7.69e+03
I-131	2.52e+04	3.58e+04	2.05e+04	1.19e+07	6.13e+04	0.00e+00	6.28e+03
I-132	1.16e+03	3.26e+03	1.16e+03	1.14e+05	5.18e+03	0.00e+00	4.06e+02
I-133	8.64e+03	1.48e+04	4.52e+03	2.15e+06	2.58e+04	0.00e+00	8.88e+03
I-134	6.44e+02	1.73e+03	6.15e+02	2.98e+04	2.75e+03	0.00e+00	1.01e+00
I-135	2.68e+03	6.98e+03	2.57e+03	4.48e+05	1.11e+04	0.00e+00	5.25e+03
Cs-134	3.73e+05	8.48e+05	7.28e+05	0.00e+00	2.87e+05	9.76e+04	1.04e+04
Cs-134m	1.27e+02	2.56e+02	1.38e+02	0.00e+00	1.46e+02	2.34e+01	6.34e+01

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	1.17e+05	1.03e+05	4.79e+04	0.00e+00	4.09e+04	1.26e+04	1.69e+03
Cs-136	3.90e+04	1.46e+05	1.10e+05	0.00e+00	8.56e+04	1.20e+04	1.17e+04
Cs-137	4.78e+05	6.21e+05	4.28e+05	0.00e+00	2.22e+05	7.52e+04	8.40e+03
Cs-138	3.31e+02	6.21e+02	3.24e+02	0.00e+00	4.80e+02	4.86e+01	1.86e-03
Cs-139	2.05e+02	2.90e+02	1.11e+02	0.00e+00	2.44e+02	2.27e+01	4.39e-21
Ba-139	9.36e-01	6.66e-04	2.74e-02	0.00e+00	6.22e-04	3.76e+03	8.96e+02
Ba-140	3.90e+04	4.90e+01	2.57e+03	0.00e+00	1.67e+01	1.27e+06	2.18e+05
Ba-141	1.00e-01	7.53e-05	3.36e-03	0.00e+00	7.00e-05	1.94e+03	1.16e-07
Ba-142	2.63e-02	2.70e-05	1.66e-03	0.00e+00	2.29e-05	1.19e+03	1.57e-16
La-140	3.44e+02	1.74e+02	4.58e+01	0.00e+00	0.00e+00	1.36e+05	4.58e+05
La-141	4.27e+00	1.33e+00	2.17e-01	0.00e+00	0.00e+00	1.08e+04	5.85e+04
La-142	6.83e-01	3.10e-01	7.72e-02	0.00e+00	0.00e+00	6.33e+03	2.11e+03
Ce-141	1.99e+04	1.35e+04	1.53e+03	0.00e+00	6.26e+03	3.62e+05	1.20e+05
Ce-143	1.86e+02	1.38e+02	1.53e+01	0.00e+00	6.08e+01	7.98e+04	2.26e+05
Ce-144	3.43e+06	1.43e+06	1.84e+05	0.00e+00	8.48e+05	7.78e+06	8.16e+05
Pr-143	9.36e+03	3.75e+03	4.64e+02	0.00e+00	2.16e+03	2.81e+05	2.00e+05
Pr-144	3.01e-02	1.25e-02	1.53e-03	0.00e+00	7.05e-03	1.02e+03	2.15e-08
Nd-147	5.27e+03	6.10e+03	3.65e+02	0.00e+00	3.56e+03	2.21e+05	1.73e+05
Pm-147	6.70e+05	6.30e+04	2.55e+04	0.00e+00	1.19e+05	5.28e+05	4.43e+04
Pm-148	3.07e+03	5.10e+02	2.56e+02	0.00e+00	9.60e+02	3.13e+05	4.64e+05
Pm-148m	7.86e+04	2.03e+04	1.55e+04	0.00e+00	3.08e+04	1.71e+06	3.34e+05
Pm-149	2.75e+02	3.90e+01	1.59e+01	0.00e+00	7.35e+01	5.77e+04	2.00e+05
Pm-151	6.80e+01	1.14e+01	5.77e+00	0.00e+00	2.04e+01	3.15e+04	1.60e+05
Sm-151	6.87e+05	1.18e+05	2.84e+04	0.00e+00	1.33e+05	3.56e+05	2.60e+04
Sm-153	1.36e+02	1.14e+02	8.32e+00	0.00e+00	3.67e+01	3.31e+04	1.26e+05
Eu-152	1.90e+06	4.33e+05	3.81e+05	0.00e+00	2.68e+06	2.74e+06	1.27e+05
Eu-154	5.92e+06	7.28e+05	5.18e+05	0.00e+00	3.49e+06	4.67e+06	2.72e+05
Eu-155	8.08e+05	1.14e+05	7.37e+04	0.00e+00	5.27e+05	7.57e+05	4.76e+04
Eu-156	1.54e+04	1.18e+04	1.92e+03	0.00e+00	7.96e+03	6.85e+05	3.60e+05
Tb-160	1.77e+05	0.00e+00	2.20e+04	0.00e+00	7.28e+04	1.54e+06	2.14e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	2.70e+06	8.40e+05	6.40e+05	0.00e+00	1.26e+06	3.15e+06	1.27e+05
W-181	4.98e+01	1.62e+01	1.74e+00	0.00e+00	0.00e+00	1.37e+04	2.02e+03
W-185	1.56e+03	5.18e+02	5.45e+01	0.00e+00	0.00e+00	4.46e+05	8.56e+04
W-187	8.48e+00	7.08e+00	2.48e+00	0.00e+00	0.00e+00	2.90e+04	1.55e+05
Pb-210	2.11e+08	5.38e+07	6.70e+06	0.00e+00	1.70e+08	2.10e+08	1.21e+04
Bi-210	1.85e+03	1.27e+04	1.06e+03	0.00e+00	1.54e+05	8.88e+06	2.36e+05
Po-210	3.18e+06	6.88e+06	7.66e+05	0.00e+00	2.36e+07	2.51e+08	3.35e+05
Ra-223	1.44e+06	2.22e+03	2.88e+05	0.00e+00	6.28e+04	2.04e+08	2.27e+06
Ra-224	1.58e+05	3.82e+02	3.17e+04	0.00e+00	1.08e+04	7.02e+07	2.41e+06
Ra-225	2.40e+06	2.85e+03	4.79e+05	0.00e+00	8.08e+04	2.34e+08	2.17e+06
Ra-226	1.00e+09	1.91e+04	7.31e+08	0.00e+00	5.42e+05	9.36e+08	2.35e+06
Ra-228	3.53e+08	9.84e+03	3.82e+08	0.00e+00	2.78e+05	1.29e+09	4.00e+05
Ac-225	3.38e+06	4.66e+06	2.27e+05	0.00e+00	5.30e+05	1.77e+08	2.02e+06
Ac-227	1.84e+10	2.44e+09	1.09e+09	0.00e+00	7.86e+08	1.93e+09	4.06e+05
Th-227	1.74e+06	3.14e+04	5.00e+04	0.00e+00	1.78e+05	3.02e+08	2.67e+06
Th-228	1.60e+09	2.71e+07	5.42e+07	0.00e+00	1.51e+08	8.08e+09	2.79e+06
Th-229	1.21e+11	3.47e+09	2.01e+09	0.00e+00	1.70e+10	2.90e+10	3.86e+05
Th-230	1.83e+10	1.05e+09	5.09e+08	0.00e+00	5.12e+09	4.97e+09	2.98e+05
Th-232	2.05e+10	8.96e+08	7.23e+06	0.00e+00	4.38e+09	4.77e+09	2.54e+05
Th-234	1.30e+04	7.65e+02	3.76e+02	0.00e+00	4.33e+03	1.51e+06	5.62e+05
Pa-231	4.06e+10	1.53e+09	1.58e+09	0.00e+00	8.56e+09	4.60e+08	3.55e+05
Pa-233	9.68e+03	1.94e+03	1.67e+03	0.00e+00	7.32e+03	2.82e+05	8.16e+04
U-232	4.11e+08	0.00e+00	2.93e+07	0.00e+00	4.45e+07	1.78e+09	3.37e+05
U-233	8.72e+07	0.00e+00	5.28e+06	0.00e+00	2.03e+07	4.26e+08	3.11e+05
U-234	8.32e+07	0.00e+00	5.17e+06	0.00e+00	1.99e+07	4.18e+08	3.05e+05
U-235	8.00e+07	0.00e+00	4.86e+06	0.00e+00	1.87e+07	3.92e+08	3.87e+05
U-236	8.00e+07	0.00e+00	4.96e+06	0.00e+00	1.91e+07	4.00e+08	2.86e+05
U-237	2.94e+02	0.00e+00	7.82e+01	0.00e+00	1.21e+03	8.16e+04	9.60e+04
U-238	7.66e+07	0.00e+00	4.54e+06	0.00e+00	1.74e+07	3.66e+08	2.73e+05
Np-237	1.25e+10	8.00e+09	5.50e+08	0.00e+00	4.08e+09	4.18e+08	3.94e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	2.37e+03	5.76e+02	3.69e+01	0.00e+00	2.18e+02	8.16e+04	1.70e+05
Np-239	2.30e+02	2.03e+02	1.24e+01	0.00e+00	7.00e+01	3.76e+04	1.19e+05
Pu-238	1.14e+10	7.77e+09	5.52e+08	0.00e+00	2.37e+09	1.46e+09	3.62e+05
Pu-239	1.33e+10	8.56e+09	6.20e+08	0.00e+00	2.64e+09	1.38e+09	3.30e+05
Pu-240	1.32e+10	8.56e+09	6.18e+08	0.00e+00	2.63e+09	1.38e+09	3.37e+05
Pu-241	2.74e+08	6.95e+07	1.03e+07	0.00e+00	4.74e+07	1.22e+06	6.92e+03
Pu-242	1.22e+10	8.24e+09	5.97e+08	0.00e+00	2.54e+09	1.32e+09	3.24e+05
Pu-244	1.43e+10	9.44e+09	6.83e+08	0.00e+00	2.91e+09	1.51e+09	4.82e+05
Am-241	1.34e+10	9.04e+09	5.37e+08	0.00e+00	4.03e+09	4.85e+08	3.68e+05
Am-242m	1.36e+10	8.48e+09	5.38e+08	0.00e+00	4.01e+09	1.95e+08	4.63e+05
Am-243	1.34e+10	8.80e+09	5.26e+08	0.00e+00	3.96e+09	4.60e+08	4.32e+05
Cm-242	1.78e+08	1.42e+08	7.87e+06	0.00e+00	3.58e+07	3.14e+08	3.93e+05
Cm-243	8.80e+09	6.09e+09	3.69e+08	0.00e+00	1.72e+09	5.05e+08	3.87e+05
Cm-244	6.70e+09	4.70e+09	2.81e+08	0.00e+00	1.31e+09	4.85e+08	3.74e+05
Cm-245	1.39e+10	9.12e+09	5.71e+08	0.00e+00	2.66e+09	4.68e+08	3.49e+05
Cm-246	1.38e+10	9.12e+09	5.70e+08	0.00e+00	2.66e+09	4.77e+08	3.43e+05
Cm-247	1.34e+10	8.96e+09	5.62e+08	0.00e+00	2.62e+09	4.68e+08	4.50e+05
Cm-248	1.12e+11	7.41e+10	4.63e+09	0.00e+00	2.16e+10	3.86e+09	7.27e+06
Cf-252	4.34e+09	0.00e+00	1.86e+08	0.00e+00	0.00e+00	1.59e+09	1.42e+06

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	7.25e+02	7.25e+02	7.25e+02	7.25e+02	7.25e+02	7.25e+02
Be-10	2.22e+06	3.46e+05	5.67e+04	0.00e+00	0.00e+00	3.07e+06	1.42e+05
C-14	2.60e+04	4.87e+03	4.87e+03	4.87e+03	4.87e+03	4.87e+03	4.87e+03
N-13	6.92e+01	6.92e+01	6.92e+01	6.92e+01	6.92e+01	6.92e+01	6.92e+01
F-18	5.22e+03	0.00e+00	5.68e+02	0.00e+00	0.00e+00	0.00e+00	3.11e+02
Na-22	1.41e+05	1.41e+05	1.41e+05	1.41e+05	1.41e+05	1.41e+05	1.41e+05
Na-24	1.38e+04	1.38e+04	1.38e+04	1.38e+04	1.38e+04	1.38e+04	1.38e+04
P-32	1.89e+06	1.10e+05	7.16e+04	0.00e+00	0.00e+00	0.00e+00	9.28e+04
Ca-41	3.24e+05	0.00e+00	3.50e+04	0.00e+00	0.00e+00	8.08e+08	2.42e+03
Sc-46	5.79e+05	1.13e+06	3.34e+05	0.00e+00	1.08e+06	0.00e+00	2.38e+05
Cr-51	0.00e+00	0.00e+00	1.35e+02	7.50e+01	3.07e+01	2.10e+04	3.00e+03
Mn-54	0.00e+00	5.11e+04	8.40e+03	0.00e+00	1.27e+04	1.98e+06	6.68e+04
Mn-56	0.00e+00	1.70e+00	2.52e-01	0.00e+00	1.79e+00	1.52e+04	5.74e+04
Fe-55	3.34e+04	2.38e+04	5.54e+03	0.00e+00	0.00e+00	1.24e+05	6.39e+03
Fe-59	1.59e+04	3.70e+04	1.43e+04	0.00e+00	0.00e+00	1.53e+06	1.78e+05
Co-57	0.00e+00	9.44e+02	9.20e+02	0.00e+00	0.00e+00	5.86e+05	3.14e+04
Co-58	0.00e+00	2.07e+03	2.78e+03	0.00e+00	0.00e+00	1.34e+06	9.52e+04
Co-60	0.00e+00	1.51e+04	1.98e+04	0.00e+00	0.00e+00	8.72e+06	2.59e+05
Ni-59	4.35e+04	1.62e+04	7.39e+03	0.00e+00	0.00e+00	1.13e+05	5.18e+03
Ni-63	5.80e+05	4.34e+04	1.98e+04	0.00e+00	0.00e+00	3.07e+05	1.42e+04
Ni-65	2.18e+00	2.93e-01	1.27e-01	0.00e+00	0.00e+00	9.36e+03	3.67e+04
Cu-64	0.00e+00	2.03e+00	8.48e-01	0.00e+00	6.41e+00	1.11e+04	6.14e+04
Zn-65	3.86e+04	1.34e+05	6.24e+04	0.00e+00	8.64e+04	1.24e+06	4.66e+04
Zn-69	4.83e-02	9.20e-02	6.46e-03	0.00e+00	6.02e-02	1.58e+03	2.85e+02
Zn-69m	1.15e+01	2.71e+01	2.49e+00	0.00e+00	1.65e+01	3.14e+04	1.71e+05
Se-79	0.00e+00	4.34e+03	6.97e+02	0.00e+00	6.50e+03	6.17e+05	2.82e+04
Br-82	0.00e+00	0.00e+00	1.82e+04	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	3.44e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	4.33e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	1.83e+01	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	1.90e+05	8.40e+04	0.00e+00	0.00e+00	0.00e+00	1.77e+04
Rb-87	0.00e+00	1.12e+05	3.66e+04	0.00e+00	0.00e+00	0.00e+00	2.44e+03
Rb-88	0.00e+00	5.46e+02	2.72e+02	0.00e+00	0.00e+00	0.00e+00	2.92e-05
Rb-89	0.00e+00	3.52e+02	2.33e+02	0.00e+00	0.00e+00	0.00e+00	3.38e-07
Sr-89	4.34e+05	0.00e+00	1.25e+04	0.00e+00	0.00e+00	2.42e+06	3.71e+05
Sr-90	3.31e+07	0.00e+00	6.66e+05	0.00e+00	0.00e+00	1.65e+07	7.65e+05
Sr-91	8.80e+01	0.00e+00	3.51e+00	0.00e+00	0.00e+00	6.07e+04	2.59e+05
Sr-92	9.52e+00	0.00e+00	4.06e-01	0.00e+00	0.00e+00	2.74e+04	1.19e+05
Y-90	2.98e+03	0.00e+00	8.00e+01	0.00e+00	0.00e+00	2.93e+05	5.59e+05
Y-91	6.61e+05	0.00e+00	1.77e+04	0.00e+00	0.00e+00	2.94e+06	4.09e+05
Y-91m	3.70e-01	0.00e+00	1.42e-02	0.00e+00	0.00e+00	3.20e+03	3.02e+01
Y-92	1.47e+01	0.00e+00	4.29e-01	0.00e+00	0.00e+00	2.68e+04	1.65e+05
Y-93	1.35e+02	0.00e+00	3.72e+00	0.00e+00	0.00e+00	8.32e+04	5.79e+05
Zr-93	5.46e+05	2.70e+04	1.47e+04	0.00e+00	9.28e+04	2.94e+05	1.28e+04
Zr-95	1.46e+05	4.58e+04	3.15e+04	0.00e+00	6.74e+04	2.69e+06	1.49e+05
Zr-97	1.38e+02	2.72e+01	1.26e+01	0.00e+00	4.12e+01	1.30e+05	6.30e+05
Nb-93m	3.31e+05	1.09e+05	2.73e+04	0.00e+00	1.27e+05	4.29e+05	2.02e+04
Nb-95	1.86e+04	1.03e+04	5.66e+03	0.00e+00	1.00e+04	7.51e+05	9.68e+04
Nb-97	3.14e-01	7.78e-02	2.84e-02	0.00e+00	9.12e-02	3.93e+03	2.17e+03
Mo-93	0.00e+00	1.33e+04	3.62e+02	0.00e+00	4.05e+03	7.05e+05	3.19e+04
Mo-99	0.00e+00	1.69e+02	3.22e+01	0.00e+00	4.11e+02	1.54e+05	2.69e+05
Tc-101	5.92e-05	8.40e-05	8.24e-04	0.00e+00	1.52e-03	6.67e+02	8.72e-07
Tc-99	3.58e+02	5.26e+02	1.43e+02	0.00e+00	6.68e+03	1.39e+06	6.39e+04
Tc-99m	1.38e-03	3.86e-03	4.99e-02	0.00e+00	5.76e-02	1.15e+03	6.13e+03
Ru-103	2.10e+03	0.00e+00	8.96e+02	0.00e+00	7.43e+03	7.83e+05	1.09e+05
Ru-105	1.12e+00	0.00e+00	4.34e-01	0.00e+00	1.41e+00	1.82e+04	9.04e+04
Ru-106	9.84e+04	0.00e+00	1.24e+04	0.00e+00	1.90e+05	1.61e+07	9.60e+05
Rh-105	1.06e+01	7.58e+00	4.99e+00	0.00e+00	3.23e+01	3.27e+04	9.84e+04
Pd-107	0.00e+00	9.36e+02	6.71e+01	0.00e+00	7.51e+03	1.30e+05	5.99e+03
Pd-109	0.00e+00	5.25e+00	1.33e+00	0.00e+00	2.69e+01	2.55e+04	1.57e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	1.38e+04	1.31e+04	7.99e+03	0.00e+00	2.50e+04	6.75e+06	2.73e+05
Ag-111	4.86e+02	2.02e+02	1.01e+02	0.00e+00	6.54e+02	3.20e+05	2.40e+05
Cd-113m	0.00e+00	1.74e+06	5.68e+04	0.00e+00	1.94e+06	2.87e+06	1.34e+05
Cd-115m	0.00e+00	2.78e+05	9.12e+03	0.00e+00	2.26e+05	2.42e+06	4.08e+05
Sn-123	3.45e+05	7.55e+03	1.12e+04	6.04e+03	0.00e+00	3.97e+06	3.33e+05
Sn-125	1.33e+04	3.54e+02	7.99e+02	2.76e+02	0.00e+00	1.01e+06	5.83e+05
Sn-126	1.74e+06	4.31e+04	6.59e+04	1.14e+04	0.00e+00	1.38e+07	1.34e+05
Sb-124	4.30e+04	7.94e+02	1.68e+04	9.76e+01	0.00e+00	3.85e+06	3.98e+05
Sb-125	7.38e+04	8.08e+02	1.72e+04	7.04e+01	0.00e+00	2.74e+06	9.92e+04
Sb-126	4.95e+03	1.02e+02	1.78e+03	2.80e+01	0.00e+00	1.24e+06	4.81e+05
Sb-127	3.71e+02	7.94e+00	1.40e+02	4.17e+00	0.00e+00	2.65e+05	3.15e+05
Te-125m	4.88e+03	2.24e+03	6.67e+02	1.40e+03	0.00e+00	5.36e+05	7.50e+04
Te-127	2.01e+00	9.12e-01	4.42e-01	1.42e+00	7.28e+00	1.12e+04	8.08e+04
Te-127m	1.80e+04	8.16e+03	2.18e+03	4.38e+03	6.54e+04	1.66e+06	1.59e+05
Te-129	7.10e-02	3.38e-02	1.76e-02	5.18e-02	2.66e-01	3.30e+03	1.62e+03
Te-129m	1.39e+04	6.58e+03	2.25e+03	4.58e+03	5.19e+04	1.98e+06	4.05e+05
Te-131	1.58e-02	8.32e-03	5.04e-03	1.24e-02	6.18e-02	2.34e+03	1.51e+01
Te-131m	9.84e+01	6.01e+01	4.02e+01	7.25e+01	4.39e+02	2.38e+05	6.21e+05
Te-132	3.60e+02	2.90e+02	2.19e+02	2.46e+02	1.95e+03	4.49e+05	4.63e+05
Te-133m	8.08e-02	5.86e-02	4.57e-02	6.54e-02	4.06e-01	6.97e+03	9.84e+02
Te-134	4.25e-02	3.48e-02	2.91e-02	3.57e-02	2.33e-01	5.40e+03	1.10e+01
I-129	2.82e+04	2.35e+04	3.92e+04	2.93e+07	4.21e+04	0.00e+00	1.83e+03
I-130	6.24e+03	1.79e+04	7.17e+03	1.49e+06	2.75e+04	0.00e+00	9.12e+03
I-131	3.54e+04	4.91e+04	2.64e+04	1.46e+07	8.40e+04	0.00e+00	6.49e+03
I-132	1.59e+03	4.38e+03	1.58e+03	1.51e+05	6.92e+03	0.00e+00	1.27e+03
I-133	1.22e+04	2.05e+04	6.22e+03	2.92e+06	3.59e+04	0.00e+00	1.03e+04
I-134	8.88e+02	2.32e+03	8.40e+02	3.95e+04	3.66e+03	0.00e+00	2.04e+01
I-135	3.70e+03	9.44e+03	3.49e+03	6.21e+05	1.49e+04	0.00e+00	6.95e+03
Cs-134	5.02e+05	1.13e+06	5.49e+05	0.00e+00	3.75e+05	1.46e+05	9.76e+03
Cs-134m	1.76e+02	3.48e+02	1.88e+02	0.00e+00	2.03e+02	3.65e+01	1.62e+02

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	1.66e+05	1.46e+05	3.58e+04	0.00e+00	5.84e+04	2.16e+04	1.78e+03
Cs-136	5.15e+04	1.94e+05	1.37e+05	0.00e+00	1.10e+05	1.78e+04	1.09e+04
Cs-137	6.70e+05	8.48e+05	3.11e+05	0.00e+00	3.04e+05	1.21e+05	8.48e+03
Cs-138	4.66e+02	8.56e+02	4.46e+02	0.00e+00	6.62e+02	7.87e+01	2.70e-01
Cs-139	2.92e+02	4.10e+02	1.58e+02	0.00e+00	3.47e+02	3.89e+01	1.33e-13
Ba-139	1.34e+00	9.44e-04	3.90e-02	0.00e+00	8.88e-04	6.46e+03	6.45e+03
Ba-140	5.47e+04	6.70e+01	3.52e+03	0.00e+00	2.28e+01	2.03e+06	2.29e+05
Ba-141	1.42e-01	1.06e-04	4.74e-03	0.00e+00	9.84e-05	3.29e+03	7.46e-04
Ba-142	3.70e-02	3.70e-05	2.27e-03	0.00e+00	3.14e-05	1.91e+03	4.79e-10
La-140	4.79e+02	2.36e+02	6.26e+01	0.00e+00	0.00e+00	2.14e+05	4.87e+05
La-141	6.10e+00	1.88e+00	3.10e-01	0.00e+00	0.00e+00	1.85e+04	1.23e+05
La-142	9.60e-01	4.25e-01	1.06e-01	0.00e+00	0.00e+00	1.02e+04	1.20e+04
Ce-141	2.84e+04	1.90e+04	2.17e+03	0.00e+00	8.88e+03	6.14e+05	1.26e+05
Ce-143	2.66e+02	1.94e+02	2.16e+01	0.00e+00	8.64e+01	1.30e+05	2.55e+05
Ce-144	4.89e+06	2.02e+06	2.62e+05	0.00e+00	1.21e+06	1.34e+07	8.64e+05
Pr-143	1.34e+04	5.31e+03	6.62e+02	0.00e+00	3.09e+03	4.83e+05	2.14e+05
Pr-144	4.30e-02	1.76e-02	2.18e-03	0.00e+00	1.01e-02	1.75e+03	2.35e-04
Nd-147	7.86e+03	8.56e+03	5.13e+02	0.00e+00	5.02e+03	3.72e+05	1.82e+05
Pm-147	9.20e+05	8.80e+04	3.60e+04	0.00e+00	1.68e+05	9.12e+05	4.70e+04
Pm-148	4.35e+03	7.10e+02	3.58e+02	0.00e+00	1.28e+03	5.22e+05	4.91e+05
Pm-148m	1.06e+05	2.68e+04	2.10e+04	0.00e+00	4.06e+04	2.56e+06	3.28e+05
Pm-149	3.93e+02	5.51e+01	2.27e+01	0.00e+00	1.05e+02	9.92e+04	2.23e+05
Pm-151	9.60e+01	1.59e+01	8.08e+00	0.00e+00	2.86e+01	5.25e+04	1.82e+05
Sm-151	8.56e+05	1.68e+05	3.89e+04	0.00e+00	1.82e+05	6.14e+05	2.82e+04
Sm-153	1.94e+02	1.61e+02	1.18e+01	0.00e+00	5.25e+01	5.69e+04	1.42e+05
Eu-152	2.37e+06	5.75e+05	5.04e+05	0.00e+00	2.67e+06	4.01e+06	1.08e+05
Eu-154	7.54e+06	9.84e+05	6.88e+05	0.00e+00	4.35e+06	7.30e+06	2.67e+05
Eu-155	1.60e+06	1.57e+05	9.68e+04	0.00e+00	6.12e+05	1.21e+07	4.78e+05
Eu-156	2.16e+04	1.62e+04	2.64e+03	0.00e+00	1.09e+04	1.10e+06	3.65e+05
Tb-160	2.43e+05	0.00e+00	3.03e+04	0.00e+00	9.60e+04	2.38e+06	2.08e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	3.52e+06	1.09e+06	7.90e+05	0.00e+00	1.60e+06	4.99e+06	1.34e+05
W-181	7.12e+01	2.30e+01	2.41e+00	0.00e+00	0.00e+00	2.36e+04	2.15e+03
W-185	2.22e+03	7.34e+02	7.78e+01	0.00e+00	0.00e+00	7.68e+05	9.12e+04
W-187	1.20e+01	9.76e+00	3.43e+00	0.00e+00	0.00e+00	4.74e+04	1.77e+05
Pb-210	2.47e+08	6.62e+07	8.56e+06	0.00e+00	2.36e+08	3.62e+08	1.28e+04
Bi-210	2.64e+03	1.81e+04	1.51e+03	0.00e+00	2.19e+05	1.53e+07	2.55e+05
Po-210	4.54e+06	9.76e+06	1.10e+06	0.00e+00	3.37e+07	4.33e+08	3.56e+05
Ra-223	2.06e+06	3.14e+03	4.11e+05	0.00e+00	8.96e+04	3.51e+08	2.43e+06
Ra-224	2.26e+05	5.42e+02	4.52e+04	0.00e+00	1.54e+04	1.21e+08	2.63e+06
Ra-225	3.42e+06	4.03e+03	6.85e+05	0.00e+00	1.15e+05	4.03e+08	2.31e+06
Ra-226	1.06e+09	2.70e+04	7.90e+08	0.00e+00	7.74e+05	1.62e+09	2.49e+06
Ra-228	4.27e+08	1.39e+04	4.70e+08	0.00e+00	3.98e+05	2.22e+09	4.24e+05
Ac-225	4.83e+06	6.60e+06	3.25e+05	0.00e+00	7.58e+05	3.05e+08	2.16e+06
Ac-227	1.99e+10	2.95e+09	1.18e+09	0.00e+00	8.56e+08	3.33e+09	4.30e+05
Th-227	2.47e+06	4.45e+04	7.14e+04	0.00e+00	2.54e+05	5.20e+08	2.86e+06
Th-228	2.08e+09	3.50e+07	7.02e+07	0.00e+00	1.96e+08	1.35e+10	2.96e+06
Th-229	1.23e+11	3.55e+09	2.05e+09	0.00e+00	1.74e+10	4.19e+10	4.10e+05
Th-230	1.87e+10	1.07e+09	5.19e+08	0.00e+00	5.24e+09	7.18e+09	3.16e+05
Th-232	2.09e+10	9.12e+08	7.37e+06	0.00e+00	4.48e+09	6.88e+09	2.69e+05
Th-234	1.86e+04	1.08e+03	5.37e+02	0.00e+00	6.18e+03	2.61e+06	5.99e+05
Pa-231	4.26e+10	1.60e+09	1.66e+09	0.00e+00	8.96e+09	7.93e+08	3.77e+05
Pa-233	1.34e+04	2.59e+03	2.31e+03	0.00e+00	9.76e+03	4.31e+05	8.00e+04
U-232	5.85e+08	0.00e+00	4.18e+07	0.00e+00	6.35e+07	3.07e+09	3.57e+05
U-233	1.24e+08	0.00e+00	7.54e+06	0.00e+00	2.90e+07	7.34e+08	3.30e+05
U-234	1.18e+08	0.00e+00	7.38e+06	0.00e+00	2.84e+07	7.19e+08	3.23e+05
U-235	1.14e+08	0.00e+00	6.94e+06	0.00e+00	2.67e+07	6.75e+08	4.10e+05
U-236	1.14e+08	0.00e+00	7.09e+06	0.00e+00	2.73e+07	6.90e+08	3.03e+05
U-237	4.20e+02	0.00e+00	1.12e+02	0.00e+00	1.73e+03	1.41e+05	1.03e+05
U-238	1.09e+08	0.00e+00	6.48e+06	0.00e+00	2.50e+07	6.31e+08	2.90e+05
Np-237	1.31e+10	8.48e+09	5.77e+08	0.00e+00	4.28e+09	7.19e+08	4.18e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	3.38e+03	8.16e+02	5.27e+01	0.00e+00	3.10e+02	1.40e+05	1.90e+05
Np-239	3.38e+02	2.88e+02	1.77e+01	0.00e+00	1.00e+02	6.49e+04	1.32e+05
Pu-238	1.20e+10	8.24e+09	5.78e+08	0.00e+00	2.48e+09	2.50e+09	3.83e+05
Pu-239	1.38e+10	8.96e+09	6.44e+08	0.00e+00	2.75e+09	2.34e+09	3.50e+05
Pu-240	1.38e+10	8.96e+09	6.43e+08	0.00e+00	2.74e+09	2.34e+09	3.57e+05
Pu-241	2.99e+08	7.65e+07	1.12e+07	0.00e+00	5.18e+07	2.08e+06	7.34e+03
Pu-242	1.28e+10	8.64e+09	6.20e+08	0.00e+00	2.65e+09	2.26e+09	3.43e+05
Pu-244	1.50e+10	9.92e+09	7.10e+08	0.00e+00	3.03e+09	2.58e+09	5.11e+05
Am-241	1.42e+10	9.60e+09	5.68e+08	0.00e+00	4.26e+09	8.40e+08	3.90e+05
Am-242m	1.43e+10	9.04e+09	5.72e+08	0.00e+00	4.24e+09	3.37e+08	4.91e+05
Am-243	1.42e+10	9.36e+09	5.56e+08	0.00e+00	4.17e+09	7.93e+08	4.58e+05
Cm-242	2.54e+08	2.01e+08	1.13e+07	0.00e+00	5.12e+07	5.41e+08	4.17e+05
Cm-243	9.52e+09	6.64e+09	4.00e+08	0.00e+00	1.87e+09	8.72e+08	4.10e+05
Cm-244	7.35e+09	5.22e+09	3.10e+08	0.00e+00	1.45e+09	8.40e+08	3.97e+05
Cm-245	1.46e+10	9.76e+09	6.02e+08	0.00e+00	2.82e+09	8.08e+08	3.70e+05
Cm-246	1.45e+10	9.76e+09	6.02e+08	0.00e+00	2.81e+09	8.24e+08	3.63e+05
Cm-247	1.42e+10	9.52e+09	5.93e+08	0.00e+00	2.77e+09	8.08e+08	4.78e+05
Cm-248	1.18e+11	7.86e+10	4.89e+09	0.00e+00	2.28e+10	6.66e+09	7.70e+06
Cf-252	5.73e+09	0.00e+00	2.46e+08	0.00e+00	0.00e+00	2.74e+09	1.51e+06

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	6.40e+02	6.40e+02	6.40e+02	6.40e+02	6.40e+02	6.40e+02
Be-10	3.12e+06	3.64e+05	7.84e+04	0.00e+00	0.00e+00	2.74e+06	6.36e+04
C-14	3.59e+04	6.73e+03	6.73e+03	6.73e+03	6.73e+03	6.73e+03	6.73e+03
N-13	8.62e+01	8.62e+01	8.62e+01	8.62e+01	8.62e+01	8.62e+01	8.62e+01
F-18	6.96e+03	0.00e+00	6.84e+02	0.00e+00	0.00e+00	0.00e+00	1.25e+03
Na-22	1.63e+05	1.63e+05	1.63e+05	1.63e+05	1.63e+05	1.63e+05	1.63e+05
Na-24	1.61e+04	1.61e+04	1.61e+04	1.61e+04	1.61e+04	1.61e+04	1.61e+04
P-32	2.60e+06	1.14e+05	9.88e+04	0.00e+00	0.00e+00	0.00e+00	4.22e+04
Ca-41	2.61e+05	0.00e+00	2.85e+04	0.00e+00	0.00e+00	2.67e+08	1.09e+03
Sc-46	7.29e+05	9.99e+05	3.85e+05	0.00e+00	8.84e+05	0.00e+00	9.06e+04
Cr-51	0.00e+00	0.00e+00	1.54e+02	8.55e+01	2.43e+01	1.70e+04	1.08e+03
Mn-54	0.00e+00	4.29e+04	9.51e+03	0.00e+00	1.00e+04	1.58e+06	2.29e+04
Mn-56	0.00e+00	1.66e+00	3.12e-01	0.00e+00	1.67e+00	1.31e+04	1.23e+05
Fe-55	4.74e+04	2.52e+04	7.77e+03	0.00e+00	0.00e+00	1.11e+05	2.87e+03
Fe-59	2.07e+04	3.34e+04	1.67e+04	0.00e+00	0.00e+00	1.27e+06	7.07e+04
Co-57	0.00e+00	9.03e+02	1.07e+03	0.00e+00	0.00e+00	5.07e+05	1.32e+04
Co-58	0.00e+00	1.77e+03	3.16e+03	0.00e+00	0.00e+00	1.11e+06	3.44e+04
Co-60	0.00e+00	1.31e+04	2.26e+04	0.00e+00	0.00e+00	7.07e+06	9.62e+04
Ni-59	6.14e+04	1.73e+04	1.05e+04	0.00e+00	0.00e+00	1.01e+05	2.33e+03
Ni-63	8.21e+05	4.62e+04	2.80e+04	0.00e+00	0.00e+00	2.75e+05	6.33e+03
Ni-65	2.99e+00	2.96e-01	1.64e-01	0.00e+00	0.00e+00	8.18e+03	8.40e+04
Cu-64	0.00e+00	1.99e+00	1.07e+00	0.00e+00	6.03e+00	9.58e+03	3.67e+04
Zn-65	4.26e+04	1.13e+05	7.03e+04	0.00e+00	7.14e+04	9.95e+05	1.63e+04
Zn-69	6.70e-02	9.66e-02	8.92e-03	0.00e+00	5.85e-02	1.42e+03	1.02e+04
Zn-69m	1.58e+01	2.69e+01	3.18e+00	0.00e+00	1.56e+01	2.72e+04	1.00e+05
Se-79	0.00e+00	4.55e+03	9.62e+02	0.00e+00	6.33e+03	5.51e+05	1.27e+04
Br-82	0.00e+00	0.00e+00	2.09e+04	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	4.74e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	5.48e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	2.53e+01	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	1.98e+05	1.14e+05	0.00e+00	0.00e+00	0.00e+00	7.99e+03
Rb-87	0.00e+00	1.17e+05	5.07e+04	0.00e+00	0.00e+00	0.00e+00	1.10e+03
Rb-88	0.00e+00	5.62e+02	3.66e+02	0.00e+00	0.00e+00	0.00e+00	1.72e+01
Rb-89	0.00e+00	3.45e+02	2.90e+02	0.00e+00	0.00e+00	0.00e+00	1.89e+00
Sr-89	5.99e+05	0.00e+00	1.72e+04	0.00e+00	0.00e+00	2.16e+06	1.67e+05
Sr-90	3.85e+07	0.00e+00	7.66e+05	0.00e+00	0.00e+00	1.48e+07	3.43e+05
Sr-91	1.21e+02	0.00e+00	4.59e+00	0.00e+00	0.00e+00	5.33e+04	1.74e+05
Sr-92	1.31e+01	0.00e+00	5.25e-01	0.00e+00	0.00e+00	2.40e+04	2.42e+05
Y-90	4.11e+03	0.00e+00	1.11e+02	0.00e+00	0.00e+00	2.62e+05	2.68e+05
Y-91	9.14e+05	0.00e+00	2.44e+04	0.00e+00	0.00e+00	2.63e+06	1.84e+05
Y-91m	5.07e-01	0.00e+00	1.84e-02	0.00e+00	0.00e+00	2.81e+03	1.72e+03
Y-92	2.03e+01	0.00e+00	5.81e-01	0.00e+00	0.00e+00	2.39e+04	2.39e+05
Y-93	1.86e+02	0.00e+00	5.11e+00	0.00e+00	0.00e+00	7.44e+04	3.88e+05
Zr-93	7.66e+05	2.89e+04	2.05e+04	0.00e+00	1.11e+05	2.63e+05	5.44e+03
Zr-95	1.90e+05	4.18e+04	3.70e+04	0.00e+00	5.96e+04	2.23e+06	6.11e+04
Zr-97	1.88e+02	2.72e+01	1.60e+01	0.00e+00	3.88e+01	1.13e+05	3.51e+05
Nb-93m	4.70e+05	1.17e+05	3.85e+04	0.00e+00	1.27e+05	3.85e+05	9.06e+03
Nb-95	2.35e+04	9.18e+03	6.55e+03	0.00e+00	8.62e+03	6.14e+05	3.70e+04
Nb-97	4.29e-01	7.70e-02	3.60e-02	0.00e+00	8.55e-02	3.42e+03	2.78e+04
Mo-93	0.00e+00	1.39e+04	5.00e+02	0.00e+00	3.92e+03	6.29e+05	1.40e+04
Mo-99	0.00e+00	1.72e+02	4.26e+01	0.00e+00	3.92e+02	1.35e+05	1.27e+05
Tc-101	8.10e-05	8.51e-05	1.08e-03	0.00e+00	1.45e-03	5.85e+02	1.63e+01
Tc-99	4.96e+02	5.51e+02	1.98e+02	0.00e+00	6.48e+03	1.25e+06	2.87e+04
Tc-99m	1.78e-03	3.48e-03	5.77e-02	0.00e+00	5.07e-02	9.51e+02	4.81e+03
Ru-103	2.79e+03	0.00e+00	1.07e+03	0.00e+00	7.03e+03	6.62e+05	4.48e+04
Ru-105	1.53e+00	0.00e+00	5.55e-01	0.00e+00	1.34e+00	1.59e+04	9.95e+04
Ru-106	1.36e+05	0.00e+00	1.69e+04	0.00e+00	1.84e+05	1.43e+07	4.29e+05
Rh-105	1.45e+01	7.77e+00	6.62e+00	0.00e+00	3.10e+01	2.89e+04	4.92e+04
Pd-107	0.00e+00	9.80e+02	9.29e+01	0.00e+00	7.29e+03	1.17e+05	2.69e+03
Pd-109	0.00e+00	5.48e+00	1.83e+00	0.00e+00	2.61e+01	2.28e+04	9.58e+04

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	1.69e+04	1.14e+04	9.14e+03	0.00e+00	2.12e+04	5.48e+06	1.00e+05
Ag-111	6.70e+02	2.10e+02	1.39e+02	0.00e+00	6.33e+02	2.86e+05	1.10e+05
Cd-113m	0.00e+00	1.82e+06	7.84e+04	0.00e+00	1.90e+06	2.57e+06	6.03e+04
Cd-115m	0.00e+00	2.92e+05	1.25e+04	0.00e+00	2.19e+05	2.17e+06	1.84e+05
Sn-123	4.77e+05	7.92e+03	1.55e+04	8.40e+03	0.00e+00	3.55e+06	1.50e+05
Sn-125	1.83e+04	3.68e+02	1.09e+03	3.81e+02	0.00e+00	8.99e+05	2.65e+05
Sn-126	2.31e+06	3.85e+04	8.73e+04	1.05e+04	0.00e+00	1.12e+07	6.03e+04
Sb-124	5.74e+04	7.40e+02	2.00e+04	1.26e+02	0.00e+00	3.24e+06	1.64e+05
Sb-125	9.84e+04	7.58e+02	2.07e+04	9.10e+01	0.00e+00	2.32e+06	4.03e+04
Sb-126	6.36e+03	9.69e+01	2.28e+03	3.70e+01	0.00e+00	1.06e+06	2.10e+05
Sb-127	5.03e+02	7.73e+00	1.74e+02	5.59e+00	0.00e+00	2.28e+05	1.41e+05
Te-125m	6.73e+03	2.33e+03	9.14e+02	1.92e+03	0.00e+00	4.77e+05	3.38e+04
Te-127	2.77e+00	9.51e-01	6.10e-01	1.96e+00	7.07e+00	1.00e+04	5.62e+04
Te-127m	2.49e+04	8.55e+03	3.02e+03	6.07e+03	6.36e+04	1.48e+06	7.14e+04
Te-129	9.77e-02	3.50e-02	2.38e-02	7.14e-02	2.57e-01	2.93e+03	2.55e+04
Te-129m	1.92e+04	6.84e+03	3.04e+03	6.33e+03	5.03e+04	1.76e+06	1.82e+05
Te-131	2.17e-02	8.44e-03	6.59e-03	1.70e-02	5.88e-02	2.05e+03	1.33e+03
Te-131m	1.34e+02	5.92e+01	5.07e+01	9.77e+01	4.00e+02	2.06e+05	3.08e+05
Te-132	4.81e+02	2.72e+02	2.63e+02	3.17e+02	1.77e+03	3.77e+05	1.38e+05
Te-133m	1.08e-01	5.59e-02	5.55e-02	8.58e-02	3.74e-01	5.92e+03	1.76e+04
Te-134	5.66e-02	3.26e-02	3.48e-02	4.59e-02	2.11e-01	4.55e+03	1.80e+03
I-129	3.88e+04	2.37e+04	2.11e+04	1.58e+07	4.00e+04	0.00e+00	7.96e+02
I-130	8.18e+03	1.64e+04	8.44e+03	1.85e+06	2.45e+04	0.00e+00	5.11e+03
I-131	4.81e+04	4.81e+04	2.73e+04	1.62e+07	7.88e+04	0.00e+00	2.84e+03
I-132	2.12e+03	4.07e+03	1.88e+03	1.94e+05	6.25e+03	0.00e+00	3.20e+03
I-133	1.66e+04	2.03e+04	7.70e+03	3.85e+06	3.38e+04	0.00e+00	5.48e+03
I-134	1.17e+03	2.16e+03	9.95e+02	5.07e+04	3.30e+03	0.00e+00	9.55e+02
I-135	4.92e+03	8.73e+03	4.14e+03	7.92e+05	1.34e+04	0.00e+00	4.44e+03
Cs-134	6.51e+05	1.01e+06	2.25e+05	0.00e+00	3.30e+05	1.21e+05	3.85e+03
Cs-134m	2.34e+02	3.30e+02	2.26e+02	0.00e+00	1.83e+02	3.09e+01	2.93e+02

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	2.31e+05	1.53e+05	1.65e+04	0.00e+00	5.66e+04	1.93e+04	8.03e+02
Cs-136	6.51e+04	1.71e+05	1.16e+05	0.00e+00	9.55e+04	1.45e+04	4.18e+03
Cs-137	9.06e+05	8.25e+05	1.28e+05	0.00e+00	2.82e+05	1.04e+05	3.62e+03
Cs-138	6.33e+02	8.40e+02	5.55e+02	0.00e+00	6.22e+02	6.81e+01	2.70e+02
Cs-139	4.03e+02	4.26e+02	2.15e+02	0.00e+00	3.36e+02	3.46e+01	2.68e-02
Ba-139	1.84e+00	9.84e-04	5.36e-02	0.00e+00	8.62e-04	5.77e+03	5.77e+04
Ba-140	7.40e+04	6.48e+01	4.33e+03	0.00e+00	2.11e+01	1.74e+06	1.02e+05
Ba-141	1.96e-01	1.09e-04	6.36e-03	0.00e+00	9.47e-05	2.92e+03	2.75e+02
Ba-142	5.00e-02	3.60e-05	2.79e-03	0.00e+00	2.91e-05	1.64e+03	2.74e+00
La-140	6.44e+02	2.25e+02	7.55e+01	0.00e+00	0.00e+00	1.83e+05	2.26e+05
La-141	8.44e+00	1.96e+00	4.26e-01	0.00e+00	0.00e+00	1.66e+04	1.62e+05
La-142	1.30e+00	4.11e-01	1.29e-01	0.00e+00	0.00e+00	8.70e+03	7.58e+04
Ce-141	3.92e+04	1.95e+04	2.90e+03	0.00e+00	8.55e+03	5.44e+05	5.66e+04
Ce-143	3.66e+02	1.99e+02	2.87e+01	0.00e+00	8.36e+01	1.15e+05	1.27e+05
Ce-144	6.77e+06	2.12e+06	3.61e+05	0.00e+00	1.17e+06	1.20e+07	3.88e+05
Pr-143	1.85e+04	5.55e+03	9.14e+02	0.00e+00	3.00e+03	4.33e+05	9.73e+04
Pr-144	5.96e-02	1.85e-02	3.00e-03	0.00e+00	9.77e-03	1.57e+03	1.97e+02
Nd-147	1.08e+04	8.73e+03	6.81e+02	0.00e+00	4.81e+03	3.28e+05	8.21e+04
Pm-147	1.30e+06	9.32e+04	5.03e+04	0.00e+00	1.65e+05	8.14e+05	2.11e+04
Pm-148	5.96e+03	7.18e+02	4.62e+02	0.00e+00	1.22e+03	4.59e+05	2.22e+05
Pm-148m	1.22e+05	2.42e+04	2.42e+04	0.00e+00	3.60e+04	2.12e+06	1.32e+05
Pm-149	5.44e+02	5.77e+01	3.13e+01	0.00e+00	1.02e+02	8.88e+04	1.08e+05
Pm-151	1.32e+02	1.60e+01	1.04e+01	0.00e+00	2.72e+01	4.59e+04	9.25e+04
Sm-151	1.16e+06	1.76e+05	5.51e+04	0.00e+00	1.81e+05	5.48e+05	1.27e+04
Sm-153	2.68e+02	1.67e+02	1.61e+01	0.00e+00	5.07e+01	5.07e+04	6.92e+04
Eu-152	2.75e+06	5.07e+05	5.96e+05	0.00e+00	2.12e+06	3.33e+06	4.22e+04
Eu-154	1.01e+07	9.21e+05	8.40e+05	0.00e+00	4.03e+06	6.14e+06	1.10e+05
Eu-155	2.07e+06	1.50e+05	1.18e+05	0.00e+00	5.59e+05	1.03e+06	1.99e+05
Eu-156	2.92e+04	1.57e+04	3.24e+03	0.00e+00	1.01e+04	9.40e+05	1.57e+05
Tb-160	2.88e+05	0.00e+00	3.58e+04	0.00e+00	8.58e+04	1.98e+06	8.44e+04

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	4.96e+06	1.04e+06	8.77e+05	0.00e+00	1.48e+06	4.18e+06	6.03e+04
W-181	9.84e+01	2.41e+01	3.33e+00	0.00e+00	0.00e+00	2.11e+04	9.66e+02
W-185	3.07e+03	7.70e+02	1.08e+02	0.00e+00	0.00e+00	6.88e+05	4.11e+04
W-187	1.63e+01	9.66e+00	4.33e+00	0.00e+00	0.00e+00	4.11e+04	9.10e+04
Pb-210	2.97e+08	6.84e+07	1.18e+07	0.00e+00	2.33e+08	3.23e+08	5.74e+03
Bi-210	3.64e+03	1.89e+04	2.09e+03	0.00e+00	2.13e+05	1.37e+07	1.19e+05
Po-210	6.29e+06	1.02e+07	1.51e+06	0.00e+00	3.27e+07	3.88e+08	1.60e+05
Ra-223	2.85e+06	3.29e+03	5.70e+05	0.00e+00	8.73e+04	3.14e+08	1.11e+06
Ra-224	3.12e+05	5.66e+02	6.25e+04	0.00e+00	1.50e+04	1.08e+08	1.24e+06
Ra-225	4.74e+06	4.22e+03	9.47e+05	0.00e+00	1.12e+05	3.60e+08	1.05e+06
Ra-226	8.66e+08	2.83e+04	7.10e+08	0.00e+00	7.51e+05	1.44e+09	1.12e+06
Ra-228	5.51e+08	1.46e+04	6.22e+08	0.00e+00	3.85e+05	1.99e+09	1.90e+05
Ac-225	6.70e+06	6.92e+06	4.48e+05	0.00e+00	7.36e+05	2.73e+08	9.88e+05
Ac-227	1.84e+10	2.98e+09	1.14e+09	0.00e+00	6.55e+08	2.97e+09	1.93e+05
Th-227	3.42e+06	4.66e+04	9.88e+04	0.00e+00	2.47e+05	4.66e+08	1.29e+06
Th-228	2.98e+09	3.85e+07	1.01e+08	0.00e+00	2.00e+08	1.24e+10	1.33e+06
Th-229	8.07e+10	2.12e+09	1.34e+09	0.00e+00	1.05e+10	4.00e+10	1.85e+05
Th-230	1.22e+10	6.40e+08	3.40e+08	0.00e+00	3.15e+09	6.84e+09	1.42e+05
Th-232	1.36e+10	5.44e+08	4.74e+06	0.00e+00	2.69e+09	6.55e+09	1.21e+05
Th-234	2.57e+04	1.14e+03	7.40e+02	0.00e+00	5.99e+03	2.33e+06	2.71e+05
Pa-231	3.19e+10	1.06e+09	1.27e+09	0.00e+00	5.77e+09	7.10e+08	1.69e+05
Pa-233	1.53e+04	2.40e+03	2.68e+03	0.00e+00	8.81e+03	3.61e+05	3.31e+04
U-232	8.10e+08	0.00e+00	5.77e+07	0.00e+00	6.18e+07	2.75e+09	1.60e+05
U-233	1.72e+08	0.00e+00	1.04e+07	0.00e+00	2.82e+07	6.55e+08	1.48e+05
U-234	1.65e+08	0.00e+00	1.02e+07	0.00e+00	2.76e+07	6.44e+08	1.45e+05
U-235	1.58e+08	0.00e+00	9.58e+06	0.00e+00	2.59e+07	6.03e+08	1.84e+05
U-236	1.58e+08	0.00e+00	9.80e+06	0.00e+00	2.65e+07	6.18e+08	1.36e+05
U-237	5.81e+02	0.00e+00	1.54e+02	0.00e+00	1.68e+03	1.26e+05	4.77e+04
U-238	1.51e+08	0.00e+00	8.95e+06	0.00e+00	2.42e+07	5.66e+08	1.30e+05
Np-237	1.01e+10	5.99e+09	4.40e+08	0.00e+00	2.74e+09	6.44e+08	1.87e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	4.66e+03	8.51e+02	7.29e+01	0.00e+00	3.02e+02	1.25e+05	9.25e+04
Np-239	4.66e+02	3.01e+02	2.35e+01	0.00e+00	9.73e+01	5.81e+04	6.40e+04
Pu-238	9.44e+09	5.92e+09	4.48e+08	0.00e+00	1.65e+09	2.25e+09	1.72e+05
Pu-239	1.03e+10	6.22e+09	4.74e+08	0.00e+00	1.77e+09	2.12e+09	1.57e+05
Pu-240	1.03e+10	6.22e+09	4.70e+08	0.00e+00	1.76e+09	2.11e+09	1.60e+05
Pu-241	2.94e+08	6.48e+07	1.08e+07	0.00e+00	4.07e+07	1.87e+06	3.29e+03
Pu-242	9.58e+09	5.99e+09	4.55e+08	0.00e+00	1.70e+09	2.04e+09	1.54e+05
Pu-244	1.12e+10	6.84e+09	5.22e+08	0.00e+00	1.95e+09	2.33e+09	2.29e+05
Am-241	1.10e+10	6.81e+09	4.59e+08	0.00e+00	2.82e+09	7.47e+08	1.75e+05
Am-242m	1.14e+10	6.51e+09	4.70e+08	0.00e+00	2.85e+09	3.01e+08	2.21e+05
Am-243	1.09e+10	6.59e+09	4.44e+08	0.00e+00	2.75e+09	7.10e+08	2.05e+05
Cm-242	3.51e+08	2.10e+08	1.55e+07	0.00e+00	4.96e+07	4.85e+08	1.87e+05
Cm-243	8.58e+09	5.25e+09	3.68e+08	0.00e+00	1.38e+09	7.77e+08	1.84e+05
Cm-244	7.18e+09	4.37e+09	3.07e+08	0.00e+00	1.13e+09	7.47e+08	1.78e+05
Cm-245	1.13e+10	6.81e+09	4.74e+08	0.00e+00	1.86e+09	7.22e+08	1.66e+05
Cm-246	1.12e+10	6.81e+09	4.74e+08	0.00e+00	1.86e+09	7.36e+08	1.63e+05
Cm-247	1.09e+10	6.73e+09	4.66e+08	0.00e+00	1.83e+09	7.22e+08	2.15e+05
Cm-248	9.06e+10	5.55e+10	3.85e+09	0.00e+00	1.51e+10	5.96e+09	3.46e+06
Cf-252	8.07e+09	0.00e+00	3.45e+08	0.00e+00	0.00e+00	2.45e+09	6.81e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	3.68e+02	3.68e+02	3.68e+02	3.68e+02	3.68e+02	3.68e+02
Be-10	1.33e+06	1.75e+05	3.71e+04	0.00e+00	0.00e+00	2.09e+06	2.42e+04
C-14	2.65e+04	5.31e+03	5.31e+03	5.31e+03	5.31e+03	5.31e+03	5.31e+03
N-13	6.15e+01	6.15e+01	6.15e+01	6.15e+01	6.15e+01	6.15e+01	6.15e+01
F-18	5.49e+03	0.00e+00	4.66e+02	0.00e+00	0.00e+00	0.00e+00	8.54e+02
Na-22	1.03e+05	1.03e+05	1.03e+05	1.03e+05	1.03e+05	1.03e+05	1.03e+05
Na-24	1.06e+04	1.06e+04	1.06e+04	1.06e+04	1.06e+04	1.06e+04	1.06e+04
P-32	2.03e+06	1.12e+05	7.74e+04	0.00e+00	0.00e+00	0.00e+00	1.61e+04
Ca-41	1.05e+05	0.00e+00	1.14e+04	0.00e+00	0.00e+00	9.72e+07	4.14e+02
Sc-46	5.25e+05	7.57e+05	2.37e+05	0.00e+00	4.98e+05	0.00e+00	3.07e+04
Cr-51	0.00e+00	0.00e+00	8.95e+01	5.75e+01	1.32e+01	1.28e+04	3.57e+02
Mn-54	0.00e+00	2.53e+04	4.98e+03	0.00e+00	4.98e+03	1.00e+06	7.06e+03
Mn-56	0.00e+00	1.54e+00	2.21e-01	0.00e+00	1.10e+00	1.25e+04	7.17e+04
Fe-55	1.97e+04	1.17e+04	3.33e+03	0.00e+00	0.00e+00	8.69e+04	1.09e+03
Fe-59	1.36e+04	2.35e+04	9.48e+03	0.00e+00	0.00e+00	1.01e+06	2.48e+04
Co-57	0.00e+00	6.51e+02	6.41e+02	0.00e+00	0.00e+00	3.79e+05	4.86e+03
Co-58	0.00e+00	1.22e+03	1.82e+03	0.00e+00	0.00e+00	7.77e+05	1.11e+04
Co-60	0.00e+00	8.02e+03	1.18e+04	0.00e+00	0.00e+00	4.51e+06	3.19e+04
Ni-59	2.53e+04	7.62e+03	4.34e+03	0.00e+00	0.00e+00	7.67e+04	8.88e+02
Ni-63	3.39e+05	2.04e+04	1.16e+04	0.00e+00	0.00e+00	2.09e+05	2.42e+03
Ni-65	2.39e+00	2.84e-01	1.23e-01	0.00e+00	0.00e+00	8.12e+03	5.01e+04
Cu-64	0.00e+00	1.88e+00	7.74e-01	0.00e+00	3.98e+00	9.30e+03	1.50e+04
Zn-65	1.93e+04	6.26e+04	3.11e+04	0.00e+00	3.25e+04	6.47e+05	5.14e+04
Zn-69	5.39e-02	9.67e-02	7.18e-03	0.00e+00	4.02e-02	1.47e+03	1.32e+04
Zn-69m	1.26e+01	2.58e+01	2.34e+00	0.00e+00	1.04e+01	2.67e+04	4.09e+04
Se-79	0.00e+00	3.15e+03	5.88e+02	0.00e+00	3.46e+03	4.19e+05	4.84e+03
Br-82	0.00e+00	0.00e+00	1.33e+04	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	3.81e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	4.00e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	2.04e+01	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	1.90e+05	8.82e+04	0.00e+00	0.00e+00	0.00e+00	3.04e+03
Rb-87	0.00e+00	9.95e+04	3.70e+04	0.00e+00	0.00e+00	0.00e+00	4.19e+02
Rb-88	0.00e+00	5.57e+02	2.87e+02	0.00e+00	0.00e+00	0.00e+00	3.39e+02
Rb-89	0.00e+00	3.21e+02	2.06e+02	0.00e+00	0.00e+00	0.00e+00	6.82e+01
Sr-89	3.98e+05	0.00e+00	1.14e+04	0.00e+00	0.00e+00	2.03e+06	6.40e+04
Sr-90	1.55e+07	0.00e+00	3.12e+05	0.00e+00	0.00e+00	1.12e+07	1.31e+05
Sr-91	9.56e+01	0.00e+00	3.46e+00	0.00e+00	0.00e+00	5.26e+04	7.34e+04
Sr-92	1.05e+01	0.00e+00	3.91e-01	0.00e+00	0.00e+00	2.38e+04	1.40e+05
Y-90	3.29e+03	0.00e+00	8.82e+01	0.00e+00	0.00e+00	2.69e+05	1.04e+05
Y-91	5.88e+05	0.00e+00	1.57e+04	0.00e+00	0.00e+00	2.45e+06	7.03e+04
Y-91m	4.07e-01	0.00e+00	1.39e-02	0.00e+00	0.00e+00	2.79e+03	2.35e+03
Y-92	1.64e+01	0.00e+00	4.61e-01	0.00e+00	0.00e+00	2.45e+04	1.27e+05
Y-93	1.50e+02	0.00e+00	4.07e+00	0.00e+00	0.00e+00	7.64e+04	1.67e+05
Zr-93	3.14e+05	1.33e+04	8.65e+03	0.00e+00	4.47e+04	1.92e+05	2.07e+03
Zr-95	1.15e+05	2.79e+04	2.03e+04	0.00e+00	3.11e+04	1.75e+06	2.17e+04
Zr-97	1.50e+02	2.56e+01	1.17e+01	0.00e+00	2.59e+01	1.10e+05	1.40e+05
Nb-93m	1.93e+05	5.03e+04	1.61e+04	0.00e+00	5.15e+04	2.93e+05	3.46e+03
Nb-95	1.57e+04	6.43e+03	3.78e+03	0.00e+00	4.72e+03	4.79e+05	1.27e+04
Nb-97	3.42e-01	7.29e-02	2.63e-02	0.00e+00	5.70e-02	3.32e+03	2.69e+04
Mo-93	0.00e+00	9.04e+03	3.11e+02	0.00e+00	2.16e+03	4.76e+05	5.26e+03
Mo-99	0.00e+00	1.65e+02	3.23e+01	0.00e+00	2.65e+02	1.35e+05	4.87e+04
Tc-101	6.51e-05	8.23e-05	8.12e-04	0.00e+00	9.79e-04	5.84e+02	8.44e+02
Tc-99	2.93e+02	3.75e+02	1.24e+02	0.00e+00	3.49e+03	9.48e+05	1.09e+04
Tc-99m	1.40e-03	2.88e-03	3.72e-02	0.00e+00	3.11e-02	8.11e+02	2.03e+03
Ru-103	2.02e+03	0.00e+00	6.79e+02	0.00e+00	4.24e+03	5.52e+05	1.61e+04
Ru-105	1.22e+00	0.00e+00	4.10e-01	0.00e+00	8.99e-01	1.57e+04	4.84e+04
Ru-106	8.68e+04	0.00e+00	1.09e+04	0.00e+00	1.07e+05	1.16e+07	1.64e+05
Rh-105	1.16e+01	7.57e+00	5.08e+00	0.00e+00	2.10e+01	2.91e+04	1.92e+04
Pd-107	0.00e+00	6.89e+02	5.75e+01	0.00e+00	3.85e+03	8.88e+04	1.03e+03
Pd-109	0.00e+00	5.49e+00	1.47e+00	0.00e+00	1.79e+01	2.35e+04	3.99e+04

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	9.98e+03	7.22e+03	5.00e+03	0.00e+00	1.09e+04	3.67e+06	3.30e+04
Ag-111	5.25e+02	2.03e+02	1.08e+02	0.00e+00	4.27e+02	2.88e+05	4.23e+04
Cd-113m	0.00e+00	9.34e+05	3.70e+04	0.00e+00	8.12e+05	1.96e+06	2.31e+04
Cd-115m	0.00e+00	2.42e+05	8.67e+03	0.00e+00	1.32e+05	2.06e+06	7.03e+04
Sn-123	2.93e+05	5.89e+03	1.02e+04	5.98e+03	0.00e+00	3.11e+06	5.71e+04
Sn-125	1.41e+04	3.51e+02	8.40e+02	3.46e+02	0.00e+00	9.00e+05	1.02e+05
Sn-126	1.16e+06	2.02e+04	4.93e+04	5.38e+03	0.00e+00	6.90e+06	2.31e+04
Sb-124	3.79e+04	5.56e+02	1.20e+04	1.01e+02	0.00e+00	2.65e+06	5.91e+04
Sb-125	5.17e+04	4.77e+02	1.09e+04	6.23e+01	0.00e+00	1.64e+06	1.47e+04
Sb-126	4.31e+03	8.41e+01	1.55e+03	3.29e+01	0.00e+00	9.63e+05	7.46e+04
Sb-127	3.95e+02	7.06e+00	1.23e+02	5.04e+00	0.00e+00	2.16e+05	5.29e+04
Te-125m	4.76e+03	1.99e+03	6.58e+02	1.62e+03	0.00e+00	4.47e+05	1.29e+04
Te-127	2.23e+00	9.53e-01	4.89e-01	1.85e+00	4.86e+00	1.03e+04	2.44e+04
Te-127m	1.67e+04	6.90e+03	2.07e+03	4.87e+03	3.75e+04	1.31e+06	2.73e+04
Te-129	7.88e-02	3.47e-02	1.88e-02	6.75e-02	1.75e-01	3.00e+03	2.63e+04
Te-129m	1.41e+04	6.09e+03	2.23e+03	5.47e+03	3.18e+04	1.68e+06	6.90e+04
Te-131	1.74e-02	8.22e-03	5.00e-03	1.58e-02	3.99e-02	2.06e+03	8.22e+03
Te-131m	1.07e+02	5.50e+01	3.63e+01	8.93e+01	2.65e+02	1.99e+05	1.19e+05
Te-132	3.72e+02	2.37e+02	1.76e+02	2.79e+02	1.03e+03	3.40e+05	4.41e+04
Te-133m	8.58e-02	5.03e-02	3.84e-02	7.73e-02	2.41e-01	5.49e+03	2.23e+04
Te-134	4.45e-02	2.86e-02	2.35e-02	4.07e-02	1.34e-01	4.10e+03	3.54e+03
I-129	3.02e+04	2.23e+04	1.62e+04	1.46e+07	2.63e+04	0.00e+00	2.97e+02
I-130	6.36e+03	1.39e+04	5.57e+03	1.60e+06	1.53e+04	0.00e+00	1.99e+03
I-131	3.79e+04	4.44e+04	1.96e+04	1.48e+07	5.18e+04	0.00e+00	1.06e+03
I-132	1.69e+03	3.54e+03	1.26e+03	1.69e+05	3.95e+03	0.00e+00	1.90e+03
I-133	1.32e+04	1.92e+04	5.60e+03	3.56e+06	2.24e+04	0.00e+00	2.16e+03
I-134	9.21e+02	1.88e+03	6.65e+02	4.45e+04	2.09e+03	0.00e+00	1.29e+03
I-135	3.86e+03	7.60e+03	2.77e+03	6.96e+05	8.47e+03	0.00e+00	1.83e+03
Cs-134	3.96e+05	7.03e+05	7.45e+04	0.00e+00	1.90e+05	7.97e+04	1.33e+03
Cs-134m	1.85e+02	2.94e+02	1.55e+02	0.00e+00	1.19e+02	2.80e+01	1.62e+02

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	1.40e+05	1.21e+05	6.62e+03	0.00e+00	3.61e+04	1.41e+04	3.05e+02
Cs-136	4.83e+04	1.35e+05	5.29e+04	0.00e+00	5.64e+04	1.18e+04	1.43e+03
Cs-137	5.49e+05	6.12e+05	4.55e+04	0.00e+00	1.72e+05	7.13e+04	1.33e+03
Cs-138	5.05e+02	7.81e+02	3.98e+02	0.00e+00	4.10e+02	6.54e+01	8.76e+02
Cs-139	3.25e+02	4.24e+02	1.71e+02	0.00e+00	2.31e+02	3.54e+01	1.86e+01
Ba-139	1.48e+00	9.84e-04	4.30e-02	0.00e+00	5.92e-04	5.95e+03	5.10e+04
Ba-140	5.60e+04	5.60e+01	2.90e+03	0.00e+00	1.34e+01	1.60e+06	3.84e+04
Ba-141	1.57e-01	1.08e-04	4.97e-03	0.00e+00	6.50e-05	2.97e+03	4.75e+03
Ba-142	3.98e-02	3.30e-05	1.96e-03	0.00e+00	1.90e-05	1.55e+03	6.93e+02
La-140	5.05e+02	2.00e+02	5.15e+01	0.00e+00	0.00e+00	1.68e+05	8.48e+04
La-141	6.79e+00	1.96e+00	3.43e-01	0.00e+00	0.00e+00	1.71e+04	8.34e+04
La-142	1.03e+00	3.77e-01	9.04e-02	0.00e+00	0.00e+00	8.22e+03	5.95e+04
Ce-141	2.77e+04	1.67e+04	1.99e+03	0.00e+00	5.25e+03	5.17e+05	2.16e+04
Ce-143	2.93e+02	1.93e+02	2.21e+01	0.00e+00	5.64e+01	1.16e+05	4.97e+04
Ce-144	3.19e+06	1.21e+06	1.76e+05	0.00e+00	5.38e+05	9.84e+06	1.48e+05
Pr-143	1.40e+04	5.24e+03	6.99e+02	0.00e+00	1.97e+03	4.33e+05	3.72e+04
Pr-144	4.79e-02	1.85e-02	2.41e-03	0.00e+00	6.72e-03	1.61e+03	4.28e+03
Nd-147	7.94e+03	8.13e+03	5.00e+02	0.00e+00	3.15e+03	3.22e+05	3.12e+04
Pm-147	5.47e+05	4.30e+04	2.18e+04	0.00e+00	6.90e+04	6.37e+05	8.05e+03
Pm-148	4.68e+03	6.75e+02	3.42e+02	0.00e+00	8.06e+02	4.48e+05	8.46e+04
Pm-148m	7.00e+04	1.74e+04	1.39e+04	0.00e+00	2.03e+04	1.71e+06	4.72e+04
Pm-149	4.34e+02	5.71e+01	2.49e+01	0.00e+00	6.94e+01	9.10e+04	4.21e+04
Pm-151	1.05e+02	1.54e+01	7.77e+00	0.00e+00	1.82e+01	4.55e+04	3.61e+04
Sm-151	4.73e+05	9.03e+04	2.28e+04	0.00e+00	7.34e+04	4.17e+05	4.84e+03
Sm-153	2.14e+02	1.65e+02	1.27e+01	0.00e+00	3.46e+01	5.18e+04	2.70e+04
Eu-152	1.10e+06	2.48e+05	2.41e+05	0.00e+00	8.32e+05	2.07e+06	1.38e+04
Eu-154	4.14e+06	4.84e+05	3.43e+05	0.00e+00	1.60e+06	4.27e+06	3.98e+04
Eu-155	8.36e+05	8.01e+04	4.84e+04	0.00e+00	2.21e+05	7.28e+05	7.27e+04
Eu-156	2.18e+04	1.34e+04	2.16e+03	0.00e+00	6.27e+03	8.57e+05	5.80e+04
Tb-160	1.57e+05	0.00e+00	1.96e+04	0.00e+00	4.48e+04	1.55e+06	3.00e+04

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	2.03e+06	4.30e+05	3.51e+05	0.00e+00	5.91e+05	2.87e+06	2.31e+04
W-181	6.80e+01	2.04e+01	2.34e+00	0.00e+00	0.00e+00	1.86e+04	3.68e+02
W-185	2.20e+03	6.76e+02	7.81e+01	0.00e+00	0.00e+00	6.27e+05	1.57e+04
W-187	1.30e+01	9.02e+00	3.12e+00	0.00e+00	0.00e+00	3.96e+04	3.56e+04
Pb-210	1.21e+08	2.83e+07	4.80e+06	0.00e+00	9.59e+07	2.46e+08	2.20e+03
Bi-210	2.88e+03	1.86e+04	1.65e+03	0.00e+00	1.44e+05	1.39e+07	4.58e+04
Po-210	4.17e+06	7.88e+06	9.97e+05	0.00e+00	1.82e+07	3.36e+08	6.10e+04
Ra-223	2.18e+06	3.16e+03	4.37e+05	0.00e+00	5.82e+04	3.15e+08	4.26e+05
Ra-224	2.48e+05	5.60e+02	4.96e+04	0.00e+00	1.02e+04	1.11e+08	4.79e+05
Ra-225	3.60e+06	4.03e+03	7.18e+05	0.00e+00	7.43e+04	3.60e+08	4.02e+05
Ra-226	3.47e+08	2.04e+04	2.87e+08	0.00e+00	4.12e+05	1.10e+09	4.27e+05
Ra-228	2.24e+08	1.07e+04	2.52e+08	0.00e+00	2.14e+05	1.53e+09	7.27e+04
Ac-225	5.17e+06	6.61e+06	3.47e+05	0.00e+00	4.89e+05	2.74e+08	3.79e+05
Ac-227	7.41e+09	1.23e+09	4.59e+08	0.00e+00	2.60e+08	2.27e+09	7.38e+04
Th-227	2.55e+06	4.24e+04	7.34e+04	0.00e+00	1.58e+05	4.58e+08	4.94e+05
Th-228	1.18e+09	1.54e+07	4.00e+07	0.00e+00	7.85e+07	6.51e+09	5.07e+05
Th-229	3.19e+10	8.32e+08	5.33e+08	0.00e+00	1.30e+09	1.78e+10	7.03e+04
Th-230	4.84e+09	2.51e+08	1.35e+08	0.00e+00	1.23e+09	3.05e+09	5.42e+04
Th-232	5.40e+09	2.14e+08	3.21e+06	0.00e+00	1.06e+09	2.93e+09	4.61e+04
Th-234	1.86e+04	1.00e+03	5.38e+02	0.00e+00	3.78e+03	2.27e+06	1.04e+05
Pa-231	1.27e+10	4.20e+08	5.07e+08	0.00e+00	2.27e+09	5.39e+08	6.45e+04
Pa-233	9.58e+03	1.85e+03	1.67e+03	0.00e+00	5.15e+03	3.07e+05	1.27e+04
U-232	3.60e+08	0.00e+00	2.98e+07	0.00e+00	3.36e+07	2.09e+09	6.10e+04
U-233	7.62e+07	0.00e+00	5.36e+06	0.00e+00	1.53e+07	4.98e+08	5.64e+04
U-234	7.31e+07	0.00e+00	5.25e+06	0.00e+00	1.50e+07	4.89e+08	5.53e+04
U-235	7.01e+07	0.00e+00	4.93e+06	0.00e+00	1.41e+07	4.59e+08	7.03e+04
U-236	7.01e+07	0.00e+00	5.04e+06	0.00e+00	1.44e+07	4.69e+08	5.19e+04
U-237	4.55e+02	0.00e+00	1.21e+02	0.00e+00	1.13e+03	1.28e+05	1.83e+04
U-238	6.71e+07	0.00e+00	4.61e+06	0.00e+00	1.32e+07	4.28e+08	4.96e+04
Np-237	4.03e+09	2.39e+09	1.76e+08	0.00e+00	1.08e+09	4.89e+08	7.14e+04

Conversion factors are in units of mrem/yr per uCi/cubic meter.

INHALATION PATHWAY DOSES DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Inhalation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	3.74e+03	8.47e+02	5.82e+01	0.00e+00	2.06e+02	1.29e+05	3.61e+04
Np-239	3.71e+02	2.98e+02	1.88e+01	0.00e+00	6.62e+01	5.95e+04	2.49e+04
Pu-238	3.77e+09	2.35e+09	1.78e+08	0.00e+00	6.50e+08	1.26e+09	6.57e+04
Pu-239	4.10e+09	2.46e+09	1.88e+08	0.00e+00	6.93e+08	1.19e+09	5.99e+04
Pu-240	4.10e+09	2.45e+09	1.88e+08	0.00e+00	6.92e+08	1.19e+09	6.10e+04
Pu-241	1.18e+08	2.59e+07	4.35e+06	0.00e+00	1.61e+07	1.07e+06	1.26e+03
Pu-242	3.81e+09	2.37e+09	1.81e+08	0.00e+00	6.68e+08	1.14e+09	5.88e+04
Pu-244	4.44e+09	2.72e+09	2.07e+08	0.00e+00	7.64e+08	1.31e+09	8.76e+04
Am-241	4.41e+09	2.73e+09	1.83e+08	0.00e+00	1.11e+09	5.68e+08	6.69e+04
Am-242m	4.55e+09	2.60e+09	1.89e+08	0.00e+00	1.12e+09	2.30e+08	8.41e+04
Am-243	4.34e+09	2.63e+09	1.78e+08	0.00e+00	1.08e+09	5.39e+08	7.84e+04
Cm-242	1.79e+08	1.21e+08	7.98e+06	0.00e+00	2.37e+07	4.16e+08	7.14e+04
Cm-243	3.46e+09	2.13e+09	1.48e+08	0.00e+00	5.47e+08	5.94e+08	7.03e+04
Cm-244	2.90e+09	1.78e+09	1.24e+08	0.00e+00	4.49e+08	5.71e+08	6.80e+04
Cm-245	4.51e+09	2.74e+09	1.90e+08	0.00e+00	7.32e+08	5.49e+08	6.34e+04
Cm-246	4.48e+09	2.74e+09	1.90e+08	0.00e+00	7.32e+08	5.59e+08	6.23e+04
Cm-247	4.35e+09	2.70e+09	1.86e+08	0.00e+00	7.21e+08	5.49e+08	8.19e+04
Cm-248	3.61e+10	2.23e+10	1.54e+09	0.00e+00	5.94e+09	4.52e+09	1.32e+06
Cf-252	3.32e+09	0.00e+00	1.41e+08	0.00e+00	0.00e+00	1.92e+09	2.59e+05

Conversion factors are in units of mrem/yr per uCi/cubic meter.

DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for all age groups by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Ground Plane Exposure Pathway R_i

Nuclide	Organ Dose Conversion Factors	
	T. Body	Skin
H-3	0.00e+00	0.00e+00
Be-10	0.00e+00	0.00e+00
C-14	0.00e+00	0.00e+00
N-13	4.02e+04	4.66e+04
F-18	3.96e+05	4.66e+05
Na-22	1.14e+10	1.28e+10
Na-24	1.19e+07	1.39e+07
P-32	0.00e+00	0.00e+00
Ca-41	9.89e+09	1.16e+10
Sc-46	8.33e+08	9.61e+08
Cr-51	4.66e+06	5.51e+06
Mn-54	1.39e+09	1.63e+09
Mn-56	9.02e+05	1.07e+06
Fe-55	0.00e+00	0.00e+00
Fe-59	2.73e+08	3.21e+08
Co-57	1.88e+08	2.06e+08
Co-58	3.79e+08	4.44e+08
Co-60	2.15e+10	2.53e+10
Ni-59	0.00e+00	0.00e+00
Ni-63	0.00e+00	0.00e+00
Ni-65	2.97e+05	3.45e+05
Cu-64	6.07e+05	6.88e+05
Zn-65	7.47e+08	8.59e+08
Zn-69	0.00e+00	0.00e+00
Zn-69m	1.27e+06	1.49e+06
Se-79	0.00e+00	0.00e+00
Br-82	2.13e+07	2.47e+07
Br-83	4.87e+03	7.08e+03
Br-84	2.03e+05	2.36e+05
Br-85	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec.

GROUND - PLANE DEPOSITION PATHWAY
DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for all age groups by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Ground Plane Exposure Pathway R_i

Nuclide	Organ Dose Conversion Factors	
	T. Body	Skin
Rb-86	8.99e+06	1.03e+07
Rb-87	0.00e+00	0.00e+00
Rb-88	3.31e+04	3.78e+04
Rb-89	1.23e+05	1.48e+05
Sr-89	2.16e+04	2.51e+04
Sr-90	0.00e+00	0.00e+00
Sr-91	2.15e+06	2.51e+06
Sr-92	7.77e+05	8.63e+05
Y-90	4.49e+03	5.31e+03
Y-91	1.07e+06	1.21e+06
Y-91m	1.00e+05	1.16e+05
Y-92	1.80e+05	2.14e+05
Y-93	1.83e+05	2.51e+05
Zr-93	0.00e+00	0.00e+00
Zr-95	2.45e+08	2.84e+08
Zr-97	2.96e+06	3.44e+06
Nb-93m	1.66e+06	2.03e+08
Nb-95	1.37e+08	1.61e+08
Nb-97	1.80e+05	2.12e+05
Mo-93	6.63e+07	2.70e+09
Mo-99	3.99e+06	4.63e+06
Tc-101	2.04e+04	2.26e+04
Tc-99	0.00e+00	0.00e+00
Tc-99m	1.84e+05	2.11e+05
Ru-103	1.08e+08	1.26e+08
Ru-105	6.36e+05	7.21e+05
Ru-106	4.22e+08	5.07e+08
Rh-105	7.42e+05	8.65e+05
Pd-107	0.00e+00	0.00e+00
Pd-109	1.50e+04	1.72e+04

Conversion factors are in units of square meter-mrem/yr per uCi/sec.

DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for all age groups by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Ground Plane Exposure Pathway R_i

Nuclide	Organ Dose Conversion Factors	
	T. Body	Skin
Ag-110m	3.44e+09	4.01e+09
Ag-111	1.02e+06	1.20e+06
Cd-113m	4.77e+06	5.39e+06
Cd-115m	0.00e+00	0.00e+00
Sn-123	0.00e+00	6.37e+09
Sn-125	4.19e+06	4.85e+06
Sn-126	2.61e+10	2.90e+10
Sb-124	5.98e+08	6.90e+08
Sb-125	2.34e+09	2.64e+09
Sb-126	8.50e+07	9.55e+07
Sb-127	1.69e+07	1.95e+07
Te-125m	1.55e+06	2.13e+06
Te-127	2.98e+03	3.28e+03
Te-127m	9.16e+04	1.08e+05
Te-129	2.62e+04	3.10e+04
Te-129m	1.98e+07	2.31e+07
Te-131	2.92e+04	3.45e+07
Te-131m	8.03e+06	9.46e+06
Te-132	4.23e+06	4.98e+06
Te-133m	4.41e+05	5.00e+05
Te-134	2.22e+04	2.66e+04
I-129	1.31e+09	2.18e+09
I-130	5.51e+06	6.69e+06
I-131	1.72e+07	2.09e+07
I-132	1.25e+06	1.46e+06
I-133	2.45e+06	2.98e+06
I-134	4.47e+05	5.30e+05
I-135	2.53e+06	2.95e+06
Cs-134	6.86e+09	8.00e+09
Cs-134m	5.73e+04	6.74e+04

Conversion factors are in units of square meter-mrem/yr per uCi/sec.

GROUND PLANE DEPOSITION PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for all age groups by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Ground Plane Exposure Pathway R_i

Nuclide	Organ Dose Conversion Factors	
	T. Body	Skin
<hr/>		
Cs-135	0.00e+00	0.00e+00
Cs-136	1.51e+08	1.71e+08
Cs-137	1.03e+10	1.20e+10
<hr/>		
Cs-138	3.59e+05	4.10e+05
Cs-139	3.14e+04	3.59e+04
Ba-139	1.06e+05	1.19e+05
<hr/>		
Ba-140	2.05e+07	2.35e+07
Ba-141	4.17e+04	4.75e+04
Ba-142	4.49e+04	5.11e+04
<hr/>		
La-140	1.92e+07	2.18e+07
La-141	3.13e+04	3.50e+04
La-142	7.60e+05	9.11e+05
<hr/>		
Ce-141	1.37e+07	1.54e+07
Ce-143	2.31e+06	2.63e+06
Ce-144	6.95e+07	8.04e+07
<hr/>		
Pr-143	0.00e+00	0.00e+00
Pr-144	1.83e+03	2.11e+03
Nd-147	8.39e+06	1.01e+07
<hr/>		
Pm-147	0.00e+00	0.00e+00
Pm-148	1.89e+07	2.18e+07
Pm-148m	4.45e+08	2.58e+09
<hr/>		
Pm-149	4.22e+04	4.90e+04
Pm-151	1.98e+06	2.07e+06
Sm-151	1.32e+08	5.76e+08
<hr/>		
Sm-153	4.02e+05	4.47e+05
Eu-152	1.46e+10	1.69e+10
Eu-154	2.19e+10	2.53e+10
<hr/>		
Eu-155	1.91e+08	2.17e+08
Eu-156	8.83e+07	1.01e+08
Tb-160	4.74e+08	5.51e+08

Conversion factors are in units of square meter-mrem/yr per uCi/sec.

GROUND PLANE DEPOSITION PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for all age groups by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Ground Plane Exposure Pathway R_i

Nuclide	Organ Dose Conversion Factors	
	T. Body	Skin
Ho-166m	2.57e+10	2.89e+10
W-181	1.94e+05	2.59e+05
W-185	0.00e+00	0.00e+00
W-187	2.35e+06	2.73e+06
Pb-210	2.95e+07	3.86e+07
Bi-210	0.00e+00	0.00e+00
Po-210	5.70e+03	6.54e+03
Ra-223	1.31e+07	1.57e+07
Ra-224	2.49e+07	2.80e+07
Ra-225	9.50e+05	1.36e+06
Ra-226	1.85e+10	2.14e+10
Ra-228	1.61e+10	1.88e+10
Ac-225	1.22e+07	1.38e+07
Ac-227	4.61e+09	5.54e+09
Th-227	7.21e+06	8.91e+06
Th-228	4.72e+09	5.31e+09
Th-229	6.38e+09	7.83e+09
Th-230	1.89e+10	2.18e+10
Th-232	8.70e+09	1.16e+10
Th-234	2.03e+06	2.39e+06
Pa-231	6.38e+09	7.83e+09
Pa-233	2.72e+07	3.14e+07
U-232	7.00e+06	7.27e+07
U-233	6.67e+09	8.12e+09
U-234	1.83e+06	4.61e+08
U-235	9.28e+09	1.16e+10
U-236	6.09e+04	5.22e+07
U-237	5.16e+06	6.71e+06
U-238	3.19e+08	4.35e+08
Np-237	4.06e+09	4.64e+09

Conversion factors are in units of square meter-mrem/yr per uCi/sec.

GROUND PLANE DEPOSITION PATHWAY
DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for all age groups by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Ground Plane Exposure Pathway R_i

Nuclide	Organ Dose Conversion Factors	
	T. Body	Skin
Np-238	4.54e+06	5.19e+06
Np-239	1.71e+06	1.98e+06
Pu-238	3.56e+06	4.92e+07
Pu-239	2.29e+06	2.23e+07
Pu-240	3.77e+06	5.22e+07
Pu-241	9.66e+06	1.43e+07
Pu-242	3.19e+06	4.64e+07
Pu-244	2.60e+09	2.79e+09
Am-241	1.98e+08	2.86e+08
Am-242m	7.29e+07	5.05e+08
Am-243	3.77e+09	4.35e+09
Cm-242	6.85e+05	2.87e+06
Cm-243	5.59e+09	7.05e+09
Cm-244	6.40e+06	3.97e+07
Cm-245	2.75e+09	3.48e+09
Cm-246	2.90e+06	4.35e+07
Cm-247	6.38e+09	7.54e+09
Cm-248	1.98e+10	1.52e+10
Cf-252	4.46e+10	4.87e+10

Conversion factors are in units of square meter-mrem/yr per uCi/sec.

OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	4.35e+02	4.35e+02	4.35e+02	4.35e+02	4.35e+02	4.35e+02
Be-10	2.46e+06	3.79e+05	6.14e+04	0.00e+00	2.87e+05	0.00e+00	2.07e+07
C-14	2.63e+08	5.27e+07	5.27e+07	5.27e+07	5.27e+07	5.27e+07	5.27e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	4.65e-03	0.00e+00	5.15e-04	0.00e+00	0.00e+00	0.00e+00	1.38e-04
Na-22	5.29e+09	5.29e+09	5.29e+09	5.29e+09	5.29e+09	5.29e+09	5.29e+09
Na-24	2.44e+06	2.44e+06	2.44e+06	2.44e+06	2.44e+06	2.44e+06	2.44e+06
P-32	1.71e+10	1.06e+09	6.61e+08	0.00e+00	0.00e+00	0.00e+00	1.92e+09
Ca-41	1.14e+10	0.00e+00	1.24e+09	0.00e+00	0.00e+00	0.00e+00	1.14e+07
Sc-46	1.79e+02	3.48e+02	1.01e+02	0.00e+00	3.25e+02	0.00e+00	1.70e+06
Cr-51	0.00e+00	0.00e+00	2.86e+04	1.71e+04	6.30e+03	3.79e+04	7.19e+06
Mn-54	0.00e+00	8.41e+06	1.61e+06	0.00e+00	2.50e+06	0.00e+00	2.58e+07
Mn-56	0.00e+00	4.15e-03	7.37e-04	0.00e+00	5.27e-03	0.00e+00	1.33e-01
Fe-55	2.51e+07	1.73e+07	4.05e+06	0.00e+00	0.00e+00	9.68e+06	9.95e+06
Fe-59	2.97e+07	6.98e+07	2.68e+07	0.00e+00	0.00e+00	1.95e+07	2.33e+08
Co-57	0.00e+00	1.28e+06	2.13e+06	0.00e+00	0.00e+00	0.00e+00	3.25e+07
Co-58	0.00e+00	4.71e+06	1.06e+07	0.00e+00	0.00e+00	0.00e+00	9.55e+07
Co-60	0.00e+00	1.64e+07	3.62e+07	0.00e+00	0.00e+00	0.00e+00	3.08e+08
Ni-59	5.05e+08	1.73e+08	8.44e+07	0.00e+00	0.00e+00	0.00e+00	3.57e+07
Ni-63	6.73e+09	4.66e+08	2.26e+08	0.00e+00	0.00e+00	0.00e+00	9.73e+07
Ni-65	3.76e-01	4.88e-02	2.23e-02	0.00e+00	0.00e+00	0.00e+00	1.24e+00
Cu-64	0.00e+00	2.39e+04	1.12e+04	0.00e+00	6.03e+04	0.00e+00	2.04e+06
Zn-65	1.37e+09	4.37e+09	1.97e+09	0.00e+00	2.92e+09	0.00e+00	2.75e+09
Zn-69	2.18e-12	4.17e-12	2.90e-13	0.00e+00	2.71e-12	0.00e+00	6.26e-13
Zn-69m	1.81e+05	4.35e+05	3.98e+04	0.00e+00	2.64e+05	0.00e+00	2.66e+07
Se-79	0.00e+00	9.15e+08	1.53e+08	0.00e+00	1.58e+09	0.00e+00	1.87e+08
Br-82	0.00e+00	0.00e+00	3.23e+07	0.00e+00	0.00e+00	0.00e+00	3.70e+07
Br-83	0.00e+00	0.00e+00	9.87e-02	0.00e+00	0.00e+00	0.00e+00	1.42e-01
Br-84	0.00e+00	0.00e+00	1.73e-23	0.00e+00	0.00e+00	0.00e+00	1.36e-28
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	2.59e+09	1.21e+09	0.00e+00	0.00e+00	0.00e+00	5.12e+08
Rb-87	0.00e+00	2.85e+09	9.92e+08	0.00e+00	0.00e+00	0.00e+00	1.34e+08
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	1.45e+09	0.00e+00	4.16e+07	0.00e+00	0.00e+00	0.00e+00	2.33e+08
Sr-90	5.38e+10	0.00e+00	1.08e+09	0.00e+00	0.00e+00	0.00e+00	1.35e+09
Sr-91	2.90e+04	0.00e+00	1.17e+03	0.00e+00	0.00e+00	0.00e+00	1.38e+05
Sr-92	4.95e-01	0.00e+00	2.14e-02	0.00e+00	0.00e+00	0.00e+00	9.81e+00
Y-90	7.09e+01	0.00e+00	1.90e+00	0.00e+00	0.00e+00	0.00e+00	7.52e+05
Y-91	8.59e+03	0.00e+00	2.30e+02	0.00e+00	0.00e+00	0.00e+00	4.73e+06
Y-91m	6.27e-20	0.00e+00	2.43e-21	0.00e+00	0.00e+00	0.00e+00	1.84e-19
Y-92	5.64e-05	0.00e+00	1.65e-06	0.00e+00	0.00e+00	0.00e+00	9.88e-01
Y-93	2.24e-01	0.00e+00	6.19e-03	0.00e+00	0.00e+00	0.00e+00	7.11e+03
Zr-93	1.62e+03	9.04e+01	4.21e+01	0.00e+00	3.43e+02	0.00e+00	9.39e+04
Zr-95	9.43e+02	3.03e+02	2.05e+02	0.00e+00	4.75e+02	0.00e+00	9.59e+05
Zr-97	4.34e-01	8.76e-02	4.01e-02	0.00e+00	1.32e-01	0.00e+00	2.71e+04
Nb-93m	4.91e+05	1.60e+05	3.95e+04	0.00e+00	1.84e+05	0.00e+00	7.40e+07
Nb-95	8.26e+04	4.59e+04	2.47e+04	0.00e+00	4.54e+04	0.00e+00	2.79e+08
Nb-97	6.58e-12	1.66e-12	6.07e-13	0.00e+00	1.94e-12	0.00e+00	6.14e-09
Mo-93	0.00e+00	4.35e+08	1.18e+07	0.00e+00	1.23e+08	0.00e+00	7.07e+07
Mo-99	0.00e+00	2.48e+07	4.72e+06	0.00e+00	5.61e+07	0.00e+00	5.74e+07
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	2.42e+07	3.59e+07	9.70e+06	0.00e+00	4.52e+08	3.05e+06	1.17e+09
Tc-99m	3.34e+00	9.44e+00	1.20e+02	0.00e+00	1.43e+02	4.63e+00	5.59e+03
Ru-103	1.02e+03	0.00e+00	4.39e+02	0.00e+00	3.89e+03	0.00e+00	1.19e+05
Ru-105	8.64e-04	0.00e+00	3.41e-04	0.00e+00	1.12e-02	0.00e+00	5.29e-01
Ru-106	2.04e+04	0.00e+00	2.58e+03	0.00e+00	3.94e+04	0.00e+00	1.32e+06
Rh-105	3.46e+05	2.53e+05	1.67e+05	0.00e+00	1.08e+06	0.00e+00	4.03e+07
Pd-107	0.00e+00	1.14e+07	7.26e+05	0.00e+00	1.02e+08	0.00e+00	7.04e+07
Pd-109	0.00e+00	4.49e+04	1.01e+04	0.00e+00	2.56e+05	0.00e+00	4.98e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

COW'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	5.82e+07	5.39e+07	3.20e+07	0.00e+00	1.06e+08	0.00e+00	2.20e+10
Ag-111	6.47e+06	2.71e+06	1.35e+06	0.00e+00	8.74e+06	0.00e+00	4.97e+09
Cd-113m	0.00e+00	2.94e+06	9.43e+04	0.00e+00	3.24e+06	0.00e+00	2.37e+07
Cd-115m	0.00e+00	1.26e+06	4.02e+04	0.00e+00	9.99e+05	0.00e+00	5.30e+07
Sn-123	5.36e+08	8.88e+06	1.31e+07	7.55e+06	0.00e+00	0.00e+00	1.09e+09
Sn-125	5.68e+07	1.14e+06	2.58e+06	9.47e+05	0.00e+00	0.00e+00	7.09e+08
Sn-126	1.63e+09	3.23e+07	4.64e+07	9.51e+06	0.00e+00	0.00e+00	4.69e+08
Sb-124	2.57e+07	4.86e+05	1.02e+07	6.24e+04	0.00e+00	2.00e+07	7.31e+08
Sb-125	2.04e+07	2.28e+05	4.86e+06	2.08e+04	0.00e+00	1.58e+07	2.25e+08
Sb-126	5.63e+06	1.15e+05	2.03e+06	3.45e+04	0.00e+00	3.45e+06	4.60e+08
Sb-127	4.53e+05	9.93e+03	1.74e+05	5.45e+03	0.00e+00	2.69e+05	1.04e+08
Te-125m	1.63e+07	5.90e+06	2.18e+06	4.90e+06	6.63e+07	0.00e+00	6.50e+07
Te-127	6.56e+02	2.35e+02	1.42e+02	4.86e+02	2.67e+03	0.00e+00	5.17e+04
Te-127m	4.58e+07	1.64e+07	5.58e+06	1.17e+07	1.86e+08	0.00e+00	1.53e+08
Te-129	2.92e-10	1.10e-10	7.11e-11	2.24e-10	1.23e-09	0.00e+00	2.20e-10
Te-129m	6.02e+07	2.25e+07	9.53e+06	2.07e+07	2.51e+08	0.00e+00	3.03e+08
Te-131	3.95e-33	1.65e-33	1.25e-33	3.25e-33	1.73e-32	0.00e+00	5.60e-34
Te-131m	3.62e+05	1.77e+05	1.47e+05	2.80e+05	1.79e+06	0.00e+00	1.76e+07
Te-132	2.40e+06	1.55e+06	1.46e+06	1.72e+06	1.50e+07	0.00e+00	7.35e+07
Te-133m	2.19e-13	1.28e-13	1.24e-13	1.86e-13	1.27e-12	0.00e+00	4.40e-14
Te-134	9.41e-19	6.16e-19	3.78e-19	8.22e-19	5.95e-18	0.00e+00	1.04e-21
I-129	7.58e+08	6.51e+08	2.14e+09	1.68e+12	1.40e+09	0.00e+00	1.03e+08
I-130	4.21e+05	1.24e+06	4.90e+05	1.05e+08	1.94e+06	0.00e+00	1.07e+06
I-131	2.96e+08	4.24e+08	2.43e+08	1.39e+11	7.26e+08	0.00e+00	1.12e+08
I-132	1.67e-01	4.47e-01	1.56e-01	1.56e+01	7.12e-01	0.00e+00	8.39e-02
I-133	3.88e+06	6.74e+06	2.06e+06	9.91e+08	1.18e+07	0.00e+00	6.06e+06
I-134	2.11e-12	5.72e-12	2.05e-12	9.92e-11	9.10e-12	0.00e+00	4.99e-15
I-135	1.29e+04	3.38e+04	1.25e+04	2.23e+06	5.42e+04	0.00e+00	3.82e+04
Cs-134	5.65e+09	1.34e+10	1.10e+10	0.00e+00	4.35e+09	1.44e+09	2.35e+08
Cs-134m	1.76e-01	3.70e-01	1.89e-01	0.00e+00	2.01e-01	3.16e-02	1.31e-01

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

COW'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	1.81e+09	1.67e+09	7.41e+08	0.00e+00	6.32e+08	1.89e+08	3.90e+07
Cs-136	2.63e+08	1.04e+09	7.48e+08	0.00e+00	5.78e+08	7.93e+07	1.18e+08
Cs-137	7.38e+09	1.01e+10	6.61e+09	0.00e+00	3.43e+09	1.14e+09	1.95e+08
Cs-138	9.72e-24	1.92e-23	9.50e-24	0.00e+00	1.41e-23	1.39e-24	8.18e-29
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	4.54e-08	3.24e-11	1.33e-09	0.00e+00	3.03e-11	1.84e-11	8.06e-08
Ba-140	2.69e+07	3.38e+04	1.76e+06	0.00e+00	1.15e+04	1.93e+04	5.54e+07
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	4.52e+00	2.28e+00	6.01e-01	0.00e+00	0.00e+00	0.00e+00	1.67e+05
La-141	3.00e-05	9.31e-06	1.52e-06	0.00e+00	0.00e+00	0.00e+00	1.11e+00
La-142	1.90e-11	8.66e-12	2.16e-12	0.00e+00	0.00e+00	0.00e+00	6.32e-08
Ce-141	4.84e+03	3.28e+03	3.72e+02	0.00e+00	1.52e+03	0.00e+00	1.25e+07
Ce-143	4.16e+01	3.08e+04	3.40e+00	0.00e+00	1.35e+01	0.00e+00	1.15e+06
Ce-144	3.58e+05	1.50e+05	1.92e+04	0.00e+00	8.87e+04	0.00e+00	1.21e+08
Pr-143	1.58e+02	6.33e+01	7.83e+00	0.00e+00	3.66e+01	0.00e+00	6.92e+05
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	9.42e+01	1.09e+02	6.51e+00	0.00e+00	6.36e+01	0.00e+00	5.22e+05
Pm-147	2.87e+03	2.70e+02	1.09e+02	0.00e+00	5.10e+02	0.00e+00	3.40e+05
Pm-148	5.93e+01	9.85e+00	4.96e+00	0.00e+00	1.86e+01	0.00e+00	7.74e+05
Pm-148m	8.57e+02	2.22e+02	1.70e+02	0.00e+00	3.35e+02	0.00e+00	1.88e+06
Pm-149	4.28e+00	6.05e-01	2.47e-01	0.00e+00	1.14e+00	0.00e+00	1.13e+05
Pm-151	6.47e-01	1.09e-01	5.48e-02	0.00e+00	1.94e-01	0.00e+00	2.99e+04
Sm-151	2.67e+03	4.60e+02	1.10e+02	0.00e+00	5.14e+02	0.00e+00	2.03e+05
Sm-153	1.99e+00	1.66e+00	1.21e-01	0.00e+00	5.36e-01	0.00e+00	5.92e+04
Eu-152	7.51e+03	1.71e+03	1.50e+03	0.00e+00	1.06e+04	0.00e+00	9.86e+05
Eu-154	2.38e+04	2.92e+03	2.08e+03	0.00e+00	1.40e+04	0.00e+00	2.12e+06
Eu-155	3.25e+03	4.61e+02	2.97e+02	0.00e+00	2.13e+03	0.00e+00	3.62e+05
Eu-156	2.52e+02	1.95e+02	3.14e+01	0.00e+00	1.30e+02	0.00e+00	1.33e+06
Tb-160	1.49e+03	0.00e+00	1.86e+02	0.00e+00	6.16e+02	0.00e+00	1.37e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	1.04e+04	3.26e+03	2.47e+03	0.00e+00	4.87e+03	0.00e+00	9.89e+05
W-181	3.39e+04	1.11e+04	1.18e+03	0.00e+00	0.00e+00	0.00e+00	1.26e+06
W-185	1.29e+06	4.32e+05	4.54e+04	0.00e+00	0.00e+00	0.00e+00	4.99e+07
W-187	6.52e+03	5.45e+03	1.91e+03	0.00e+00	0.00e+00	0.00e+00	1.79e+06
Pb-210	7.32e+10	2.09e+10	2.60e+09	0.00e+00	5.88e+10	0.00e+00	1.07e+07
Bi-210	3.56e+05	2.46e+06	2.04e+05	0.00e+00	2.96e+07	0.00e+00	3.67e+07
Po-210	7.42e+08	1.58e+09	1.79e+08	0.00e+00	5.25e+09	0.00e+00	1.33e+08
Ra-223	1.22e+11	1.88e+08	2.44e+10	0.00e+00	5.33e+09	0.00e+00	7.89e+09
Ra-224	1.41e+10	3.42e+07	2.83e+09	0.00e+00	9.65e+08	0.00e+00	2.98e+09
Ra-225	1.90e+11	2.25e+08	3.79e+10	0.00e+00	6.39e+09	0.00e+00	8.85e+09
Ra-226	1.87e+13	3.55e+08	1.36e+13	0.00e+00	1.01e+10	0.00e+00	2.05e+10
Ra-228	6.87e+12	1.91e+08	7.43e+12	0.00e+00	5.42e+09	0.00e+00	3.46e+09
Ac-225	6.17e+04	8.49e+04	4.15e+03	0.00e+00	9.67e+03	0.00e+00	5.70e+06
Ac-227	7.21e+07	9.56e+06	4.28e+06	0.00e+00	3.09e+06	0.00e+00	3.16e+06
Th-227	2.80e+05	5.06e+03	8.06e+03	0.00e+00	2.88e+04	0.00e+00	1.10e+07
Th-228	1.88e+07	3.18e+05	6.35e+05	0.00e+00	1.77e+06	0.00e+00	2.13e+07
Th-229	5.26e+08	1.50e+07	8.69e+06	0.00e+00	7.26e+07	0.00e+00	3.02e+06
Th-230	7.96e+07	4.52e+06	2.20e+06	0.00e+00	2.18e+07	0.00e+00	2.33e+06
Th-232	8.89e+07	3.86e+06	5.80e+04	0.00e+00	1.86e+07	0.00e+00	1.98e+06
Th-234	1.85e+03	1.09e+02	5.33e+01	0.00e+00	6.16e+02	0.00e+00	2.61e+06
Pa-231	1.58e+08	5.95e+06	6.14e+06	0.00e+00	3.34e+07	0.00e+00	2.77e+06
Pa-233	1.28e+02	2.58e+01	2.22e+01	0.00e+00	9.70e+01	0.00e+00	3.99e+05
U-232	1.59e+10	0.00e+00	1.14e+09	0.00e+00	1.73e+09	0.00e+00	2.62e+08
U-233	3.37e+09	0.00e+00	2.04e+08	0.00e+00	7.84e+08	0.00e+00	2.42e+08
U-234	3.23e+09	0.00e+00	2.00e+08	0.00e+00	7.69e+08	0.00e+00	2.37e+08
U-235	3.10e+09	0.00e+00	1.88e+08	0.00e+00	7.23e+08	0.00e+00	3.02e+08
U-236	3.10e+09	0.00e+00	1.92e+08	0.00e+00	7.38e+08	0.00e+00	2.23e+08
U-237	5.65e+04	0.00e+00	1.50e+04	0.00e+00	2.32e+05	0.00e+00	1.99e+07
U-238	2.96e+09	0.00e+00	1.75e+08	0.00e+00	6.76e+08	0.00e+00	2.13e+08
Np-237	4.87e+07	3.46e+06	2.14e+06	0.00e+00	1.59e+07	0.00e+00	3.07e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

COW'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i

Ri factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	3.62e+01	9.75e-01	5.63e-01	0.00e+00	3.30e+00	0.00e+00	9.06e+04
Np-239	3.68e+00	3.61e-01	1.99e-01	0.00e+00	1.13e+00	0.00e+00	7.41e+04
Pu-238	9.73e+06	1.23e+06	2.64e+05	0.00e+00	1.13e+06	0.00e+00	1.13e+06
Pu-239	1.12e+07	1.35e+06	2.95e+05	0.00e+00	1.25e+06	0.00e+00	1.03e+06
Pu-240	1.12e+07	1.34e+06	2.95e+05	0.00e+00	1.25e+06	0.00e+00	1.05e+06
Pu-241	2.42e+05	1.15e+04	5.12e+03	0.00e+00	2.36e+04	0.00e+00	2.16e+04
Pu-242	1.04e+07	1.30e+06	2.84e+05	0.00e+00	1.21e+06	0.00e+00	1.01e+06
Pu-244	1.21e+07	1.49e+06	3.26e+05	0.00e+00	1.38e+06	0.00e+00	1.50e+06
Am-241	2.89e+07	2.70e+07	2.07e+06	0.00e+00	1.56e+07	0.00e+00	2.84e+06
Am-242m	2.94e+07	2.56e+07	2.10e+06	0.00e+00	1.56e+07	0.00e+00	3.61e+06
Am-243	2.91e+07	2.67e+07	2.05e+06	0.00e+00	1.54e+07	0.00e+00	3.36e+06
Cm-242	7.27e+05	7.73e+05	4.83e+04	0.00e+00	2.19e+05	0.00e+00	2.79e+06
Cm-243	2.31e+07	2.12e+07	1.45e+06	0.00e+00	6.75e+06	0.00e+00	3.01e+06
Cm-244	1.76e+07	1.65e+07	1.11e+06	0.00e+00	5.17e+06	0.00e+00	2.91e+06
Cm-245	3.62e+07	3.16e+07	2.23e+06	0.00e+00	1.04e+07	0.00e+00	2.72e+06
Cm-246	3.59e+07	3.15e+07	2.22e+06	0.00e+00	1.04e+07	0.00e+00	2.67e+06
Cm-247	3.50e+07	3.11e+07	2.19e+06	0.00e+00	1.02e+07	0.00e+00	3.51e+06
Cm-248	2.91e+08	2.56e+08	1.80e+07	0.00e+00	8.42e+07	0.00e+00	5.68e+07
Cf-252	9.92e+06	0.00e+00	2.39e+05	0.00e+00	0.00e+00	0.00e+00	1.09e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	5.66e+02	5.66e+02	5.66e+02	5.66e+02	5.66e+02	5.66e+02
Be-10	4.47e+06	6.92e+05	1.13e+05	0.00e+00	5.29e+05	0.00e+00	2.83e+07
C-14	4.86e+08	9.72e+07	9.72e+07	9.72e+07	9.72e+07	9.72e+07	9.72e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	8.30e-03	0.00e+00	9.10e-04	0.00e+00	0.00e+00	0.00e+00	7.48e-04
Na-22	9.18e+09	9.18e+09	9.18e+09	9.18e+09	9.18e+09	9.18e+09	9.18e+09
Na-24	4.27e+06	4.27e+06	4.27e+06	4.27e+06	4.27e+06	4.27e+06	4.27e+06
P-32	3.15e+10	1.95e+09	1.22e+09	0.00e+00	0.00e+00	0.00e+00	2.65e+09
Ca-41	1.57e+10	0.00e+00	1.70e+09	0.00e+00	0.00e+00	0.00e+00	1.56e+07
Sc-46	3.04e+02	5.92e+02	1.76e+02	0.00e+00	5.67e+02	0.00e+00	2.02e+06
Cr-51	0.00e+00	0.00e+00	4.99e+04	2.77e+04	1.09e+04	7.13e+04	8.39e+06
Mn-54	0.00e+00	1.40e+07	2.78e+06	0.00e+00	4.18e+06	0.00e+00	2.87e+07
Mn-56	0.00e+00	7.36e-03	1.31e-03	0.00e+00	9.32e-03	0.00e+00	4.85e-01
Fe-55	4.45e+07	3.16e+07	7.36e+06	0.00e+00	0.00e+00	2.00e+07	1.37e+07
Fe-59	5.18e+07	1.21e+08	4.67e+07	0.00e+00	0.00e+00	3.81e+07	2.86e+08
Co-57	0.00e+00	2.24e+06	3.76e+06	0.00e+00	0.00e+00	0.00e+00	4.19e+07
Co-58	0.00e+00	7.94e+06	1.83e+07	0.00e+00	0.00e+00	0.00e+00	1.09e+08
Co-60	0.00e+00	2.78e+07	6.26e+07	0.00e+00	0.00e+00	0.00e+00	3.62e+08
Ni-59	8.82e+08	3.11e+08	1.50e+08	0.00e+00	0.00e+00	0.00e+00	4.88e+07
Ni-63	1.18e+10	8.35e+08	4.01e+08	0.00e+00	0.00e+00	0.00e+00	1.33e+08
Ni-65	6.87e-01	8.78e-02	4.00e-02	0.00e+00	0.00e+00	0.00e+00	4.76e+00
Cu-64	0.00e+00	4.26e+04	2.00e+04	0.00e+00	1.08e+05	0.00e+00	3.30e+06
Zn-65	2.11e+09	7.32e+09	3.41e+09	0.00e+00	4.68e+09	0.00e+00	3.10e+09
Zn-69	4.01e-12	7.65e-12	5.35e-13	0.00e+00	5.00e-12	0.00e+00	1.41e-11
Zn-69m	3.30e+05	7.79e+05	7.15e+04	0.00e+00	4.74e+05	0.00e+00	4.28e+07
Se-79	0.00e+00	1.67e+09	2.81e+08	0.00e+00	2.92e+09	0.00e+00	2.56e+08
Br-82	0.00e+00	0.00e+00	5.61e+07	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	1.82e-01	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	3.09e-23	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	4.73e+09	2.22e+09	0.00e+00	0.00e+00	0.00e+00	7.00e+08
Rb-87	0.00e+00	5.24e+09	1.83e+09	0.00e+00	0.00e+00	0.00e+00	1.83e+08
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	2.67e+09	0.00e+00	7.66e+07	0.00e+00	0.00e+00	0.00e+00	3.19e+08
Sr-90	8.13e+10	0.00e+00	1.63e+09	0.00e+00	0.00e+00	0.00e+00	1.86e+09
Sr-91	5.33e+04	0.00e+00	2.12e+03	0.00e+00	0.00e+00	0.00e+00	2.42e+05
Sr-92	9.07e-01	0.00e+00	3.86e-02	0.00e+00	0.00e+00	0.00e+00	2.31e+01
Y-90	1.30e+02	0.00e+00	3.51e+00	0.00e+00	0.00e+00	0.00e+00	1.07e+06
Y-91	1.58e+04	0.00e+00	4.24e+02	0.00e+00	0.00e+00	0.00e+00	6.48e+06
Y-91m	1.15e-19	0.00e+00	4.39e-21	0.00e+00	0.00e+00	0.00e+00	5.42e-18
Y-92	1.04e-04	0.00e+00	3.01e-06	0.00e+00	0.00e+00	0.00e+00	2.86e+00
Y-93	4.13e-01	0.00e+00	1.13e-02	0.00e+00	0.00e+00	0.00e+00	1.26e+04
Zr-93	2.76e+03	1.36e+02	7.43e+01	0.00e+00	4.81e+02	0.00e+00	1.29e+05
Zr-95	1.65e+03	5.20e+02	3.58e+02	0.00e+00	7.65e+02	0.00e+00	1.20e+06
Zr-97	7.90e-01	1.56e-01	7.20e-02	0.00e+00	2.37e-01	0.00e+00	4.23e+04
Nb-93m	8.55e+05	2.81e+05	7.03e+04	0.00e+00	3.28e+05	0.00e+00	1.01e+08
Nb-95	1.41e+05	7.81e+04	4.30e+04	0.00e+00	7.57e+04	0.00e+00	3.34e+08
Nb-97	1.20e-11	2.98e-12	1.09e-12	0.00e+00	3.48e-12	0.00e+00	7.11e-08
Mo-93	0.00e+00	7.93e+08	2.17e+07	0.00e+00	2.27e+08	0.00e+00	9.65e+07
Mo-99	0.00e+00	4.47e+07	8.53e+06	0.00e+00	1.02e+08	0.00e+00	8.01e+07
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	4.46e+07	6.56e+07	1.79e+07	0.00e+00	8.33e+08	6.78e+06	1.61e+09
Tc-99m	5.80e+00	1.62e+01	2.10e+02	0.00e+00	2.41e+02	8.97e+00	1.06e+04
Ru-103	1.81e+03	0.00e+00	7.74e+02	0.00e+00	6.38e+03	0.00e+00	1.51e+05
Ru-105	1.58e-03	0.00e+00	6.13e-04	0.00e+00	1.99e-02	0.00e+00	1.27e+00
Ru-106	3.75e+04	0.00e+00	4.73e+03	0.00e+00	7.24e+04	0.00e+00	1.80e+06
Rh-105	6.38e+05	4.61e+05	3.03e+05	0.00e+00	1.96e+06	0.00e+00	5.87e+07
Pd-107	0.00e+00	2.07e+07	1.34e+06	0.00e+00	1.87e+08	0.00e+00	9.63e+07
Pd-109	0.00e+00	8.22e+04	1.87e+04	0.00e+00	4.75e+05	0.00e+00	8.29e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	9.63e+07	9.11e+07	5.54e+07	0.00e+00	1.74e+08	0.00e+00	2.56e+10
Ag-111	1.19e+07	4.95e+06	2.49e+06	0.00e+00	1.61e+07	0.00e+00	6.90e+09
Cd-113m	0.00e+00	5.38e+06	1.73e+05	0.00e+00	5.95e+06	0.00e+00	3.23e+07
Cd-115m	0.00e+00	2.30e+06	7.41e+04	0.00e+00	1.84e+06	0.00e+00	7.27e+07
Sn-123	9.88e+08	1.62e+07	2.40e+07	1.30e+07	0.00e+00	0.00e+00	1.49e+09
Sn-125	1.05e+08	2.08e+06	4.72e+06	1.64e+06	0.00e+00	0.00e+00	9.85e+08
Sn-126	2.89e+09	5.38e+07	8.23e+07	1.42e+07	0.00e+00	0.00e+00	6.43e+08
Sb-124	4.59e+07	8.46e+05	1.79e+07	1.04e+05	0.00e+00	4.01e+07	9.25e+08
Sb-125	3.65e+07	3.99e+05	8.55e+06	3.49e+04	0.00e+00	3.21e+07	2.84e+08
Sb-126	1.00e+07	2.05e+05	3.61e+06	5.68e+04	0.00e+00	7.20e+06	5.94e+08
Sb-127	8.23e+05	1.76e+04	3.11e+05	9.25e+03	0.00e+00	5.60e+05	1.40e+08
Te-125m	3.00e+07	1.08e+07	4.02e+06	8.39e+06	0.00e+00	0.00e+00	8.86e+07
Te-127	1.22e+03	4.31e+02	2.61e+02	8.38e+02	4.92e+03	0.00e+00	9.38e+04
Te-127m	8.44e+07	2.99e+07	1.00e+07	2.01e+07	3.42e+08	0.00e+00	2.10e+08
Te-129	5.37e-10	2.00e-10	1.31e-10	3.84e-10	2.25e-09	0.00e+00	2.94e-09
Te-129m	1.10e+08	4.09e+07	1.74e+07	3.55e+07	4.61e+08	0.00e+00	4.13e+08
Te-131	7.22e-33	2.98e-33	2.26e-33	5.57e-33	3.16e-32	0.00e+00	5.93e-34
Te-131m	6.58e+05	3.15e+05	2.63e+05	4.75e+05	3.29e+06	0.00e+00	2.53e+07
Te-132	4.29e+06	2.72e+06	2.56e+06	2.87e+06	2.61e+07	0.00e+00	8.61e+07
Te-133m	3.95e-13	2.24e-13	2.18e-13	3.13e-13	2.22e-12	0.00e+00	9.07e-13
Te-134	1.68e-18	1.08e-18	1.12e-18	1.38e-18	1.03e-17	0.00e+00	6.22e-20
I-129	1.39e+09	1.17e+09	1.96e+09	1.43e+12	2.10e+09	0.00e+00	1.37e+08
I-130	7.41e+05	2.14e+06	8.56e+05	1.75e+08	3.30e+06	0.00e+00	1.65e+06
I-131	5.37e+08	7.52e+08	4.04e+08	2.20e+11	1.30e+09	0.00e+00	1.49e+08
I-132	2.96e-01	7.75e-01	2.78e-01	2.61e+01	1.22e+00	0.00e+00	3.38e-01
I-133	7.08e+06	1.20e+07	3.66e+06	1.68e+09	2.11e+07	0.00e+00	9.09e+06
I-134	3.74e-12	9.92e-12	3.56e-12	1.65e-10	1.56e-11	0.00e+00	1.31e-13
I-135	2.29e+04	5.90e+04	2.19e+04	3.80e+06	9.33e+04	0.00e+00	6.54e+04
Cs-134	9.81e+09	2.31e+10	1.07e+10	0.00e+00	7.34e+09	2.80e+09	2.87e+08
Cs-134m	3.13e-01	6.49e-01	3.34e-01	0.00e+00	3.61e-01	6.34e-02	4.32e-01

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	3.33e+09	3.05e+09	7.13e+08	0.00e+00	1.16e+09	4.21e+08	5.34e+07
Cs-136	4.48e+08	1.76e+09	1.18e+09	0.00e+00	9.60e+08	1.51e+08	1.42e+08
Cs-137	1.34e+10	1.78e+10	6.20e+09	0.00e+00	6.06e+09	2.35e+09	2.53e+08
Cs-138	1.76e-23	3.38e-23	1.69e-23	0.00e+00	2.50e-23	2.91e-24	1.54e-26
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	8.40e-08	5.91e-11	2.45e-09	0.00e+00	5.57e-11	4.07e-11	7.50e-07
Ba-140	4.85e+07	5.95e+04	3.13e+06	0.00e+00	2.02e+04	4.00e+04	7.48e+07
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	8.11e+00	3.99e+00	1.06e+00	0.00e+00	0.00e+00	0.00e+00	2.29e+05
La-141	5.52e-05	1.70e-05	2.80e-06	0.00e+00	0.00e+00	0.00e+00	3.01e+00
La-142	3.43e-11	1.53e-11	3.80e-12	0.00e+00	0.00e+00	0.00e+00	4.64e-07
Ce-141	8.88e+03	5.93e+03	6.81e+02	0.00e+00	2.79e+03	0.00e+00	1.70e+07
Ce-143	7.65e+01	5.56e+04	6.21e+00	0.00e+00	2.50e+01	0.00e+00	1.67e+06
Ce-144	6.58e+05	2.72e+05	3.54e+04	0.00e+00	1.63e+05	0.00e+00	1.66e+08
Pr-143	2.90e+02	1.16e+02	1.44e+01	0.00e+00	6.73e+01	0.00e+00	9.55e+05
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	1.81e+02	1.97e+02	1.18e+01	0.00e+00	1.16e+02	0.00e+00	7.11e+05
Pm-147	5.15e+03	4.89e+02	1.99e+02	0.00e+00	9.32e+02	0.00e+00	4.65e+05
Pm-148	1.09e+02	1.77e+01	8.93e+00	0.00e+00	3.20e+01	0.00e+00	1.06e+06
Pm-148m	1.49e+03	3.78e+02	2.96e+02	0.00e+00	5.73e+02	0.00e+00	2.38e+06
Pm-149	7.88e+00	1.11e+00	4.54e-01	0.00e+00	2.11e+00	0.00e+00	1.63e+05
Pm-151	1.18e+00	1.95e-01	9.88e-02	0.00e+00	3.51e-01	0.00e+00	4.38e+04
Sm-151	4.35e+03	8.37e+02	1.96e+02	0.00e+00	9.17e+02	0.00e+00	2.84e+05
Sm-153	3.65e+00	3.02e+00	2.22e-01	0.00e+00	9.88e-01	0.00e+00	8.53e+04
Eu-152	1.22e+04	2.93e+03	2.58e+03	0.00e+00	1.36e+04	0.00e+00	1.08e+06
Eu-154	3.94e+04	5.08e+03	3.58e+03	0.00e+00	2.27e+04	0.00e+00	2.69e+06
Eu-155	8.48e+03	8.18e+02	5.07e+02	0.00e+00	3.20e+03	0.00e+00	4.69e+06
Eu-156	4.55e+02	3.41e+02	5.57e+01	0.00e+00	2.30e+02	0.00e+00	1.74e+06
Tb-160	2.65e+03	0.00e+00	3.31e+02	0.00e+00	1.05e+03	0.00e+00	1.72e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	1.78e+04	5.48e+03	3.97e+03	0.00e+00	8.03e+03	0.00e+00	1.35e+06
W-181	6.27e+04	2.02e+04	2.12e+03	0.00e+00	0.00e+00	0.00e+00	1.72e+06
W-185	2.39e+06	7.88e+05	8.33e+04	0.00e+00	0.00e+00	0.00e+00	6.81e+07
W-187	1.19e+04	9.73e+03	3.41e+03	0.00e+00	0.00e+00	0.00e+00	2.63e+06
Pb-210	1.12e+11	3.36e+10	4.33e+09	0.00e+00	1.06e+11	0.00e+00	1.46e+07
Bi-210	6.57e+05	4.49e+06	3.76e+05	0.00e+00	5.46e+07	0.00e+00	5.13e+07
Po-210	1.37e+09	2.88e+09	3.31e+08	0.00e+00	9.68e+09	0.00e+00	1.81e+08
Ra-223	2.25e+11	3.42e+08	4.50e+10	0.00e+00	9.83e+09	0.00e+00	1.09e+10
Ra-224	2.62e+10	6.25e+07	5.22e+09	0.00e+00	1.79e+09	0.00e+00	4.20e+09
Ra-225	3.50e+11	4.11e+08	6.98e+10	0.00e+00	1.18e+10	0.00e+00	1.22e+10
Ra-226	2.57e+13	6.49e+08	1.91e+13	0.00e+00	1.85e+10	0.00e+00	2.80e+10
Ra-228	1.08e+13	3.49e+08	1.20e+13	0.00e+00	9.98e+09	0.00e+00	4.74e+09
Ac-225	1.14e+05	1.55e+05	7.63e+03	0.00e+00	1.78e+04	0.00e+00	7.89e+06
Ac-227	1.02e+08	1.51e+07	6.07e+06	0.00e+00	4.38e+06	0.00e+00	4.32e+06
Th-227	5.16e+05	9.27e+03	1.49e+04	0.00e+00	5.29e+04	0.00e+00	1.51e+07
Th-228	3.32e+07	5.56e+05	1.12e+06	0.00e+00	3.13e+06	0.00e+00	2.91e+07
Th-229	7.13e+08	2.05e+07	1.18e+07	0.00e+00	9.92e+07	0.00e+00	4.13e+06
Th-230	1.08e+08	6.13e+06	2.99e+06	0.00e+00	2.99e+07	0.00e+00	3.18e+06
Th-232	1.21e+08	5.24e+06	8.13e+04	0.00e+00	2.55e+07	0.00e+00	2.71e+06
Th-234	3.39e+03	1.99e+02	9.86e+01	0.00e+00	1.13e+03	0.00e+00	3.60e+06
Pa-231	2.15e+08	8.08e+06	8.38e+06	0.00e+00	4.54e+07	0.00e+00	3.79e+06
Pa-233	2.30e+02	4.42e+01	3.95e+01	0.00e+00	1.67e+02	0.00e+00	5.05e+05
U-232	2.94e+10	0.00e+00	2.10e+09	0.00e+00	3.18e+09	0.00e+00	3.58e+08
U-233	6.18e+09	0.00e+00	3.76e+08	0.00e+00	1.45e+09	0.00e+00	3.32e+08
U-234	5.93e+09	0.00e+00	3.68e+08	0.00e+00	1.42e+09	0.00e+00	3.25e+08
U-235	5.68e+09	0.00e+00	3.46e+08	0.00e+00	1.33e+09	0.00e+00	4.13e+08
U-236	5.68e+09	0.00e+00	3.54e+08	0.00e+00	1.36e+09	0.00e+00	3.05e+08
U-237	1.04e+05	0.00e+00	2.77e+04	0.00e+00	4.28e+05	0.00e+00	2.76e+07
U-238	5.43e+09	0.00e+00	3.24e+08	0.00e+00	1.25e+09	0.00e+00	2.91e+08
Np-237	6.63e+07	4.76e+06	2.92e+06	0.00e+00	2.16e+07	0.00e+00	4.19e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	6.65e+01	1.78e+00	1.04e+00	0.00e+00	6.10e+00	0.00e+00	1.31e+05
Np-239	7.01e+00	6.62e-01	3.67e-01	0.00e+00	2.08e+00	0.00e+00	1.06e+05
Pu-238	1.34e+07	1.71e+06	3.63e+05	0.00e+00	1.55e+06	0.00e+00	1.54e+06
Pu-239	1.53e+07	1.85e+06	4.01e+05	0.00e+00	1.71e+06	0.00e+00	1.41e+06
Pu-240	1.52e+07	1.85e+06	4.01e+05	0.00e+00	1.71e+06	0.00e+00	1.43e+06
Pu-241	3.48e+05	1.67e+04	7.34e+03	0.00e+00	3.40e+04	0.00e+00	2.94e+04
Pu-242	1.41e+07	1.78e+06	3.87e+05	0.00e+00	1.65e+06	0.00e+00	1.38e+06
Pu-244	1.65e+07	2.03e+06	4.43e+05	0.00e+00	1.88e+06	0.00e+00	2.05e+06
Am-241	3.94e+07	3.72e+07	2.84e+06	0.00e+00	2.13e+07	0.00e+00	3.89e+06
Am-242m	4.02e+07	3.54e+07	2.89e+06	0.00e+00	2.14e+07	0.00e+00	4.93e+06
Am-243	3.97e+07	3.66e+07	2.80e+06	0.00e+00	2.10e+07	0.00e+00	4.60e+06
Cm-242	1.34e+06	1.41e+06	8.88e+04	0.00e+00	4.05e+05	0.00e+00	3.82e+06
Cm-243	3.24e+07	3.00e+07	2.04e+06	0.00e+00	9.51e+06	0.00e+00	4.12e+06
Cm-244	2.51e+07	2.37e+07	1.59e+06	0.00e+00	7.41e+06	0.00e+00	3.98e+06
Cm-245	4.94e+07	4.34e+07	3.04e+06	0.00e+00	1.42e+07	0.00e+00	3.72e+06
Cm-246	4.90e+07	4.34e+07	3.04e+06	0.00e+00	1.42e+07	0.00e+00	3.65e+06
Cm-247	4.77e+07	4.27e+07	2.99e+06	0.00e+00	1.40e+07	0.00e+00	4.80e+06
Cm-248	3.96e+08	3.52e+08	2.47e+07	0.00e+00	1.15e+08	0.00e+00	7.73e+07
Cf-252	1.70e+07	0.00e+00	4.10e+05	0.00e+00	0.00e+00	0.00e+00	1.50e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	8.97e+02	8.97e+02	8.97e+02	8.97e+02	8.97e+02	8.97e+02
Be-10	1.11e+07	1.29e+06	2.79e+05	0.00e+00	9.13e+05	0.00e+00	2.26e+07
C-14	1.19e+09	2.39e+08	2.39e+08	2.39e+08	2.39e+08	2.39e+08	2.39e+08
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	1.97e-02	0.00e+00	1.96e-03	0.00e+00	0.00e+00	0.00e+00	5.34e-03
Na-22	1.90e+10	1.90e+10	1.90e+10	1.90e+10	1.90e+10	1.90e+10	1.90e+10
Na-24	8.88e+06	8.88e+06	8.88e+06	8.88e+06	8.88e+06	8.88e+06	8.88e+06
P-32	7.78e+10	3.64e+09	3.00e+09	0.00e+00	0.00e+00	0.00e+00	2.15e+09
Ca-41	2.28e+10	0.00e+00	2.49e+09	0.00e+00	0.00e+00	0.00e+00	1.25e+07
Sc-46	6.83e+02	9.36e+02	3.61e+02	0.00e+00	8.29e+02	0.00e+00	1.37e+06
Cr-51	0.00e+00	0.00e+00	1.02e+05	5.65e+04	1.54e+04	1.03e+05	5.40e+06
Mn-54	0.00e+00	2.10e+07	5.59e+06	0.00e+00	5.88e+06	0.00e+00	1.76e+07
Mn-56	0.00e+00	1.28e-02	2.90e-03	0.00e+00	1.55e-02	0.00e+00	1.86e+00
Fe-55	1.12e+08	5.93e+07	1.84e+07	0.00e+00	0.00e+00	3.35e+07	1.10e+07
Fe-59	1.20e+08	1.95e+08	9.69e+07	0.00e+00	0.00e+00	5.64e+07	2.03e+08
Co-57	0.00e+00	3.84e+06	7.77e+06	0.00e+00	0.00e+00	0.00e+00	3.14e+07
Co-58	0.00e+00	1.21e+07	3.71e+07	0.00e+00	0.00e+00	0.00e+00	7.07e+07
Co-60	0.00e+00	4.32e+07	1.27e+08	0.00e+00	0.00e+00	0.00e+00	2.39e+08
Ni-59	2.22e+09	5.90e+08	3.76e+08	0.00e+00	0.00e+00	0.00e+00	3.91e+07
Ni-63	2.96e+10	1.59e+09	1.01e+09	0.00e+00	0.00e+00	0.00e+00	1.07e+08
Ni-65	1.68e+00	1.58e-01	9.24e-02	0.00e+00	0.00e+00	0.00e+00	1.94e+01
Cu-64	0.00e+00	7.49e+04	4.52e+04	0.00e+00	1.81e+05	0.00e+00	3.51e+06
Zn-65	4.13e+09	1.10e+10	6.85e+09	0.00e+00	6.94e+09	0.00e+00	1.93e+09
Zn-69	9.87e-12	1.43e-11	1.32e-12	0.00e+00	8.65e-12	0.00e+00	8.99e-10
Zn-69m	8.06e+05	1.37e+06	1.62e+05	0.00e+00	7.98e+05	0.00e+00	4.47e+07
Se-79	0.00e+00	3.12e+09	6.92e+08	0.00e+00	5.07e+09	0.00e+00	2.05e+08
Br-82	0.00e+00	0.00e+00	1.15e+08	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	4.47e-01	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	7.00e-23	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	8.77e+09	5.39e+09	0.00e+00	0.00e+00	0.00e+00	5.64e+08
Rb-87	0.00e+00	9.75e+09	4.52e+09	0.00e+00	0.00e+00	0.00e+00	1.46e+08
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	6.62e+09	0.00e+00	1.89e+08	0.00e+00	0.00e+00	0.00e+00	2.56e+08
Sr-90	1.68e+11	0.00e+00	3.38e+09	0.00e+00	0.00e+00	0.00e+00	1.50e+09
Sr-91	1.31e+05	0.00e+00	4.94e+03	0.00e+00	0.00e+00	0.00e+00	2.89e+05
Sr-92	2.21e+00	0.00e+00	8.88e-02	0.00e+00	0.00e+00	0.00e+00	4.19e+01
Y-90	3.22e+02	0.00e+00	8.63e+00	0.00e+00	0.00e+00	0.00e+00	9.18e+05
Y-91	3.90e+04	0.00e+00	1.04e+03	0.00e+00	0.00e+00	0.00e+00	5.20e+06
Y-91m	2.80e-19	0.00e+00	1.02e-20	0.00e+00	0.00e+00	0.00e+00	5.49e-16
Y-92	2.56e-04	0.00e+00	7.32e-06	0.00e+00	0.00e+00	0.00e+00	7.39e+00
Y-93	1.02e+00	0.00e+00	2.79e-02	0.00e+00	0.00e+00	0.00e+00	1.51e+04
Zr-93	6.87e+03	2.57e+02	1.83e+02	0.00e+00	9.95e+02	0.00e+00	9.75e+04
Zr-95	3.83e+03	8.42e+02	7.50e+02	0.00e+00	1.21e+03	0.00e+00	8.79e+05
Zr-97	1.92e+00	2.78e-01	1.64e-01	0.00e+00	3.99e-01	0.00e+00	4.21e+04
Nb-93m	2.15e+06	5.37e+05	1.77e+05	0.00e+00	5.80e+05	0.00e+00	8.10e+07
Nb-95	3.18e+05	1.24e+05	8.84e+04	0.00e+00	1.16e+05	0.00e+00	2.29e+08
Nb-97	2.91e-11	5.26e-12	2.46e-12	0.00e+00	5.84e-12	0.00e+00	1.62e-06
Mo-93	0.00e+00	1.49e+09	5.34e+07	0.00e+00	3.92e+08	0.00e+00	7.53e+07
Mo-99	0.00e+00	8.14e+07	2.01e+07	0.00e+00	1.74e+08	0.00e+00	6.73e+07
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	1.10e+08	1.23e+08	4.40e+07	0.00e+00	1.44e+09	1.08e+07	1.29e+09
Tc-99m	1.33e+01	2.61e+01	4.32e+02	0.00e+00	3.79e+02	1.32e+01	1.48e+04
Ru-103	4.28e+03	0.00e+00	1.65e+03	0.00e+00	1.08e+04	0.00e+00	1.11e+05
Ru-105	3.85e-03	0.00e+00	1.40e-03	0.00e+00	3.39e-02	0.00e+00	2.51e+00
Ru-106	9.24e+04	0.00e+00	1.15e+04	0.00e+00	1.25e+05	0.00e+00	1.44e+06
Rh-105	1.56e+06	8.40e+05	7.18e+05	0.00e+00	3.35e+06	0.00e+00	5.21e+07
Pd-107	0.00e+00	3.88e+07	3.30e+06	0.00e+00	3.25e+08	0.00e+00	7.71e+07
Pd-109	0.00e+00	1.53e+05	4.59e+04	0.00e+00	8.22e+05	0.00e+00	9.05e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	2.09e+08	1.41e+08	1.13e+08	0.00e+00	2.63e+08	0.00e+00	1.68e+10
Ag-111	2.94e+07	9.20e+06	6.07e+06	0.00e+00	2.78e+07	0.00e+00	5.63e+09
Cd-113m	0.00e+00	1.00e+07	4.27e+05	0.00e+00	1.03e+07	0.00e+00	2.59e+07
Cd-115m	0.00e+00	4.29e+06	1.83e+05	0.00e+00	3.19e+06	0.00e+00	5.83e+07
Sn-123	2.44e+09	3.03e+07	5.95e+07	3.21e+07	0.00e+00	0.00e+00	1.20e+09
Sn-125	2.57e+08	3.88e+06	1.15e+07	4.03e+06	0.00e+00	0.00e+00	7.98e+08
Sn-126	6.85e+09	8.54e+07	1.95e+08	2.34e+07	0.00e+00	0.00e+00	5.14e+08
Sb-124	1.09e+08	1.41e+06	3.81e+07	2.40e+05	0.00e+00	6.03e+07	6.79e+08
Sb-125	8.70e+07	6.71e+05	1.82e+07	8.06e+04	0.00e+00	4.85e+07	2.08e+08
Sb-126	2.29e+07	3.51e+05	8.23e+06	1.34e+05	0.00e+00	1.09e+07	4.62e+08
Sb-127	1.98e+06	3.07e+04	6.88e+05	2.21e+04	0.00e+00	8.60e+05	1.12e+08
Te-125m	7.38e+07	2.00e+07	9.84e+06	2.07e+07	0.00e+00	0.00e+00	7.12e+07
Te-127	2.99e+03	8.06e+02	6.41e+02	2.07e+03	8.50e+03	0.00e+00	1.17e+05
Te-127m	2.08e+08	5.60e+07	2.47e+07	4.97e+07	5.93e+08	0.00e+00	1.68e+08
Te-129	1.33e-09	3.70e-10	3.15e-10	9.46e-10	3.88e-09	0.00e+00	8.25e-08
Te-129m	2.71e+08	7.58e+07	4.21e+07	8.75e+07	7.97e+08	0.00e+00	3.31e+08
Te-131	1.77e-32	5.40e-33	5.27e-33	1.36e-32	5.36e-32	0.00e+00	9.31e-32
Te-131m	1.60e+06	5.54e+05	5.89e+05	1.14e+06	5.36e+06	0.00e+00	2.25e+07
Te-132	1.03e+07	4.54e+06	5.48e+06	6.61e+06	4.21e+07	0.00e+00	4.57e+07
Te-133m	9.46e-13	3.82e-13	4.74e-13	7.33e-13	3.63e-12	0.00e+00	2.92e-11
Te-134	3.99e-18	1.79e-18	2.39e-18	3.15e-18	1.66e-17	0.00e+00	1.82e-17
I-129	3.43e+09	2.11e+09	1.88e+09	1.38e+12	3.55e+09	0.00e+00	1.06e+08
I-130	1.73e+06	3.50e+06	1.80e+06	3.86e+08	5.23e+06	0.00e+00	1.64e+06
I-131	1.30e+09	1.31e+09	7.45e+08	4.33e+11	2.15e+09	0.00e+00	1.17e+08
I-132	7.01e-01	1.29e+00	5.92e-01	5.97e+01	1.97e+00	0.00e+00	1.52e+00
I-133	1.72e+07	2.13e+07	8.05e+06	3.95e+09	3.55e+07	0.00e+00	8.57e+06
I-134	8.87e-12	1.65e-11	7.57e-12	3.79e-10	2.52e-11	0.00e+00	1.09e-11
I-135	5.43e+04	9.77e+04	4.62e+04	8.66e+06	1.50e+05	0.00e+00	7.45e+04
Cs-134	2.26e+10	3.71e+10	7.84e+09	0.00e+00	1.15e+10	4.13e+09	2.00e+08
Cs-134m	7.42e-01	1.10e+00	7.18e-01	0.00e+00	5.80e-01	9.59e-02	1.39e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	8.19e+09	5.71e+09	5.85e+08	0.00e+00	2.01e+09	6.72e+08	4.27e+07
Cs-136	1.01e+09	2.78e+09	1.80e+09	0.00e+00	1.48e+09	2.21e+08	9.77e+07
Cs-137	3.22e+10	3.09e+10	4.55e+09	0.00e+00	1.01e+10	3.62e+09	1.93e+08
Cs-138	4.27e-23	5.94e-23	3.77e-23	0.00e+00	4.18e-23	4.50e-24	2.74e-23
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	2.06e-07	1.10e-10	5.98e-09	0.00e+00	9.62e-11	6.48e-11	1.19e-05
Ba-140	1.17e+08	1.03e+05	6.84e+06	0.00e+00	3.34e+04	6.12e+04	5.93e+07
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	1.94e+01	6.79e+00	2.29e+00	0.00e+00	0.00e+00	0.00e+00	1.89e+05
La-141	1.36e-04	3.17e-05	6.89e-06	0.00e+00	0.00e+00	0.00e+00	7.06e+00
La-142	8.30e-11	2.64e-11	8.28e-12	0.00e+00	0.00e+00	0.00e+00	5.24e-06
Ce-141	2.19e+04	1.09e+04	1.62e+03	0.00e+00	4.78e+03	0.00e+00	1.36e+07
Ce-143	1.88e+02	1.02e+05	1.47e+01	0.00e+00	4.27e+01	0.00e+00	1.49e+06
Ce-144	1.62e+06	5.09e+05	8.66e+04	0.00e+00	2.82e+05	0.00e+00	1.33e+08
Pr-143	7.18e+02	2.16e+02	3.56e+01	0.00e+00	1.17e+02	0.00e+00	7.75e+05
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	4.45e+02	3.60e+02	2.79e+01	0.00e+00	1.98e+02	0.00e+00	5.71e+05
Pm-147	1.29e+04	9.19e+02	4.94e+02	0.00e+00	1.62e+03	0.00e+00	3.72e+05
Pm-148	2.66e+02	3.20e+01	2.07e+01	0.00e+00	5.44e+01	0.00e+00	8.54e+05
Pm-148m	3.06e+03	6.09e+02	6.09e+02	0.00e+00	9.03e+02	0.00e+00	1.72e+06
Pm-149	1.94e+01	2.07e+00	1.12e+00	0.00e+00	3.65e+00	0.00e+00	1.41e+05
Pm-151	2.88e+00	3.51e-01	2.28e-01	0.00e+00	5.95e-01	0.00e+00	3.98e+04
Sm-151	1.05e+04	1.57e+03	4.93e+02	0.00e+00	1.62e+03	0.00e+00	2.27e+05
Sm-153	9.02e+00	5.61e+00	5.41e-01	0.00e+00	1.71e+00	0.00e+00	7.46e+04
Eu-152	2.52e+04	4.59e+03	5.45e+03	0.00e+00	1.94e+04	0.00e+00	7.54e+05
Eu-154	9.46e+04	8.51e+03	7.77e+03	0.00e+00	3.74e+04	0.00e+00	1.98e+06
Eu-155	1.94e+04	1.39e+03	1.09e+03	0.00e+00	5.22e+03	0.00e+00	3.49e+06
Eu-156	1.10e+03	5.88e+02	1.22e+02	0.00e+00	3.79e+02	0.00e+00	1.33e+06
Tb-160	5.61e+03	0.00e+00	6.96e+02	0.00e+00	1.67e+03	0.00e+00	1.24e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	4.44e+04	9.30e+03	7.86e+03	0.00e+00	1.32e+04	0.00e+00	1.08e+06
W-181	1.54e+05	3.79e+04	5.21e+03	0.00e+00	0.00e+00	0.00e+00	1.38e+06
W-185	5.89e+06	1.47e+06	2.06e+05	0.00e+00	0.00e+00	0.00e+00	5.48e+07
W-187	2.89e+04	1.71e+04	7.69e+03	0.00e+00	0.00e+00	0.00e+00	2.41e+06
Pb-210	2.42e+11	6.21e+10	1.06e+10	0.00e+00	1.87e+11	0.00e+00	1.17e+07
Bi-210	1.62e+06	8.38e+06	9.29e+05	0.00e+00	9.45e+07	0.00e+00	4.25e+07
Po-210	3.37e+09	5.39e+09	8.14e+08	0.00e+00	1.68e+10	0.00e+00	1.45e+08
Ra-223	5.55e+11	6.41e+08	1.11e+11	0.00e+00	1.70e+10	0.00e+00	8.84e+09
Ra-224	6.43e+10	1.17e+08	1.29e+10	0.00e+00	3.09e+09	0.00e+00	3.53e+09
Ra-225	8.62e+11	7.70e+08	1.72e+11	0.00e+00	2.04e+10	0.00e+00	9.89e+09
Ra-226	3.78e+13	1.21e+09	3.11e+13	0.00e+00	3.21e+10	0.00e+00	2.24e+10
Ra-228	2.52e+13	6.53e+08	2.82e+13	0.00e+00	1.73e+10	0.00e+00	3.80e+09
Ac-225	2.81e+05	2.89e+05	1.88e+04	0.00e+00	3.09e+04	0.00e+00	6.43e+06
Ac-227	1.69e+08	2.72e+07	1.05e+07	0.00e+00	5.99e+06	0.00e+00	3.46e+06
Th-227	1.27e+06	1.73e+04	3.67e+04	0.00e+00	9.17e+04	0.00e+00	1.22e+07
Th-228	8.33e+07	1.07e+06	2.82e+06	0.00e+00	5.55e+06	0.00e+00	2.33e+07
Th-229	9.67e+08	2.43e+07	1.61e+07	0.00e+00	1.19e+08	0.00e+00	3.31e+06
Th-230	1.46e+08	7.32e+06	4.08e+06	0.00e+00	3.57e+07	0.00e+00	2.55e+06
Th-232	1.63e+08	6.25e+06	1.24e+05	0.00e+00	3.05e+07	0.00e+00	2.17e+06
Th-234	8.40e+03	3.71e+02	2.43e+02	0.00e+00	1.97e+03	0.00e+00	2.90e+06
Pa-231	2.91e+08	9.63e+06	1.16e+07	0.00e+00	5.27e+07	0.00e+00	3.03e+06
Pa-233	4.68e+02	7.30e+01	8.18e+01	0.00e+00	2.69e+02	0.00e+00	3.73e+05
U-232	7.24e+10	0.00e+00	5.18e+09	0.00e+00	5.51e+09	0.00e+00	2.87e+08
U-233	1.53e+10	0.00e+00	9.26e+08	0.00e+00	2.51e+09	0.00e+00	2.65e+08
U-234	1.47e+10	0.00e+00	9.09e+08	0.00e+00	2.46e+09	0.00e+00	2.60e+08
U-235	1.41e+10	0.00e+00	8.51e+08	0.00e+00	2.31e+09	0.00e+00	3.30e+08
U-236	1.41e+10	0.00e+00	8.72e+08	0.00e+00	2.36e+09	0.00e+00	2.44e+08
U-237	2.57e+05	0.00e+00	6.83e+04	0.00e+00	7.42e+05	0.00e+00	2.27e+07
U-238	1.35e+10	0.00e+00	7.98e+08	0.00e+00	2.16e+09	0.00e+00	2.33e+08
Np-237	9.17e+07	6.05e+06	4.03e+06	0.00e+00	2.49e+07	0.00e+00	3.36e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

Ri factors for Child age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Cow's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	1.64e+02	3.32e+00	2.55e+00	0.00e+00	1.06e+01	0.00e+00	1.14e+05
Np-239	1.73e+01	1.24e+00	8.71e-01	0.00e+00	3.58e+00	0.00e+00	9.17e+04
Pu-238	1.96e+07	2.27e+06	5.20e+05	0.00e+00	1.89e+06	0.00e+00	1.23e+06
Pu-239	2.12e+07	2.27e+06	5.45e+05	0.00e+00	2.01e+06	0.00e+00	1.13e+06
Pu-240	2.11e+07	2.35e+06	5.45e+05	0.00e+00	2.01e+06	0.00e+00	1.15e+06
Pu-241	6.35e+05	2.59e+04	1.32e+04	0.00e+00	4.86e+04	0.00e+00	2.36e+04
Pu-242	1.96e+07	2.27e+06	5.25e+05	0.00e+00	1.93e+06	0.00e+00	1.10e+06
Pu-244	2.29e+07	2.60e+07	6.01e+05	0.00e+00	2.22e+06	0.00e+00	1.65e+06
Am-241	5.54e+07	4.77e+07	4.16e+06	0.00e+00	2.54e+07	0.00e+00	3.11e+06
Am-242m	5.76e+07	4.61e+07	4.28e+06	0.00e+00	2.59e+07	0.00e+00	3.95e+06
Am-243	5.51e+07	4.65e+07	4.04e+06	0.00e+00	2.49e+07	0.00e+00	3.68e+06
Cm-242	3.30e+06	2.63e+06	2.19e+05	0.00e+00	7.02e+05	0.00e+00	3.06e+06
Cm-243	5.26e+07	4.27e+07	3.38e+06	0.00e+00	1.27e+07	0.00e+00	3.30e+06
Cm-244	4.43e+07	3.59e+07	2.84e+06	0.00e+00	1.04e+07	0.00e+00	3.19e+06
Cm-245	6.87e+07	5.51e+07	4.32e+06	0.00e+00	1.69e+07	0.00e+00	2.98e+06
Cm-246	6.79e+07	5.51e+07	4.32e+06	0.00e+00	1.69e+07	0.00e+00	2.92e+06
Cm-247	6.62e+07	5.43e+07	4.24e+06	0.00e+00	1.66e+07	0.00e+00	3.85e+06
Cm-248	5.51e+08	4.48e+08	3.50e+07	0.00e+00	1.37e+08	0.00e+00	6.21e+07
Cf-252	4.25e+07	0.00e+00	1.03e+06	0.00e+00	0.00e+00	0.00e+00	1.20e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.36e+03	1.36e+03	1.36e+03	1.36e+03	1.36e+03	1.36e+03
Be-10	1.41e+07	2.05e+06	4.25e+05	0.00e+00	1.35e+06	0.00e+00	2.29e+07
C-14	2.34e+09	5.00e+08	5.00e+08	5.00e+08	5.00e+08	5.00e+08	5.00e+08
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	4.12e-02	0.00e+00	3.51e-03	0.00e+00	0.00e+00	0.00e+00	9.67e-03
Na-22	3.18e+10	3.18e+10	3.18e+10	3.18e+10	3.18e+10	3.18e+10	3.18e+10
Na-24	1.55e+07	1.55e+07	1.55e+07	1.55e+07	1.55e+07	1.55e+07	1.55e+07
P-32	1.60e+11	9.43e+09	6.21e+09	0.00e+00	0.00e+00	0.00e+00	2.17e+09
Ca-41	2.46e+10	0.00e+00	2.69e+09	0.00e+00	0.00e+00	0.00e+00	1.26e+07
Sc-46	1.30e+03	1.88e+03	5.86e+02	0.00e+00	1.23e+03	0.00e+00	1.22e+06
Cr-51	0.00e+00	0.00e+00	1.61e+05	1.05e+05	2.30e+04	2.05e+05	4.70e+06
Mn-54	0.00e+00	3.90e+07	8.84e+06	0.00e+00	8.64e+06	0.00e+00	1.43e+07
Mn-56	0.00e+00	3.14e-02	5.42e-03	0.00e+00	2.70e-02	0.00e+00	2.86e+00
Fe-55	1.35e+08	8.73e+07	2.33e+07	0.00e+00	0.00e+00	4.27e+07	1.11e+07
Fe-59	2.24e+08	3.92e+08	1.54e+08	0.00e+00	0.00e+00	1.16e+08	1.87e+08
Co-57	0.00e+00	8.95e+06	1.46e+07	0.00e+00	0.00e+00	0.00e+00	3.05e+07
Co-58	0.00e+00	2.42e+07	6.05e+07	0.00e+00	0.00e+00	0.00e+00	6.04e+07
Co-60	0.00e+00	8.81e+07	2.08e+08	0.00e+00	0.00e+00	0.00e+00	2.10e+08
Ni-59	2.61e+09	7.99e+08	4.50e+08	0.00e+00	0.00e+00	0.00e+00	3.95e+07
Ni-63	3.49e+10	2.16e+09	1.21e+09	0.00e+00	0.00e+00	0.00e+00	1.07e+08
Ni-65	3.56e+00	4.03e-01	1.83e-01	0.00e+00	0.00e+00	0.00e+00	3.07e+01
Cu-64	0.00e+00	1.86e+05	8.62e+04	0.00e+00	3.15e+05	0.00e+00	3.82e+06
Zn-65	5.55e+09	1.90e+10	8.78e+09	0.00e+00	9.23e+09	0.00e+00	1.61e+10
Zn-69	2.10e-11	3.79e-11	2.82e-12	0.00e+00	1.57e-11	0.00e+00	3.09e-09
Zn-69m	1.70e+06	3.48e+06	3.17e+05	0.00e+00	1.41e+06	0.00e+00	4.82e+07
Se-79	0.00e+00	7.77e+09	1.44e+09	0.00e+00	9.00e+09	0.00e+00	2.07e+08
Br-82	0.00e+00	0.00e+00	1.93e+08	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	9.49e-01	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	1.35e-22	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	2.23e+10	1.10e+10	0.00e+00	0.00e+00	0.00e+00	5.69e+08
Rb-87	0.00e+00	2.19e+10	8.69e+09	0.00e+00	0.00e+00	0.00e+00	1.48e+08
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	1.26e+10	0.00e+00	3.61e+08	0.00e+00	0.00e+00	0.00e+00	2.59e+08
Sr-90	1.86e+11	0.00e+00	3.77e+09	0.00e+00	0.00e+00	0.00e+00	1.52e+09
Sr-91	2.73e+05	0.00e+00	9.87e+03	0.00e+00	0.00e+00	0.00e+00	3.23e+05
Sr-92	4.71e+00	0.00e+00	1.75e-01	0.00e+00	0.00e+00	0.00e+00	5.08e+01
Y-90	6.82e+02	0.00e+00	1.83e+01	0.00e+00	0.00e+00	0.00e+00	9.41e+05
Y-91	7.33e+04	0.00e+00	1.95e+03	0.00e+00	0.00e+00	0.00e+00	5.25e+06
Y-91m	5.94e-19	0.00e+00	2.03e-20	0.00e+00	0.00e+00	0.00e+00	1.98e-15
Y-92	5.44e-04	0.00e+00	1.53e-05	0.00e+00	0.00e+00	0.00e+00	1.04e+01
Y-93	2.16e+00	0.00e+00	5.90e-02	0.00e+00	0.00e+00	0.00e+00	1.71e+04
Zr-93	7.94e+03	3.78e+02	2.28e+02	0.00e+00	1.11e+03	0.00e+00	9.83e+04
Zr-95	6.80e+03	1.66e+03	1.18e+03	0.00e+00	1.79e+03	0.00e+00	8.26e+05
Zr-97	4.07e+00	6.99e-01	3.19e-01	0.00e+00	7.04e-01	0.00e+00	4.46e+04
Nb-93m	2.52e+06	6.83e+05	2.13e+05	0.00e+00	6.66e+05	0.00e+00	8.16e+07
Nb-95	5.93e+05	2.44e+05	1.41e+05	0.00e+00	1.75e+05	0.00e+00	2.06e+08
Nb-97	6.16e-11	1.31e-11	4.74e-12	0.00e+00	1.03e-11	0.00e+00	4.15e-06
Mo-93	0.00e+00	3.49e+09	1.12e+08	0.00e+00	6.97e+08	0.00e+00	7.47e+07
Mo-99	0.00e+00	2.08e+08	4.06e+07	0.00e+00	3.11e+08	0.00e+00	6.86e+07
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	2.22e+08	3.00e+08	9.36e+07	0.00e+00	2.53e+09	2.92e+07	1.30e+09
Tc-99m	2.77e+01	5.70e+01	7.35e+02	0.00e+00	6.14e+02	2.98e+01	1.66e+04
Ru-103	8.67e+03	0.00e+00	2.90e+03	0.00e+00	1.80e+04	0.00e+00	1.05e+05
Ru-105	8.12e-03	0.00e+00	2.74e-03	0.00e+00	5.97e-02	0.00e+00	3.23e+00
Ru-106	1.90e+05	0.00e+00	2.38e+04	0.00e+00	2.25e+05	0.00e+00	1.44e+06
Rh-105	3.32e+06	2.17e+06	1.46e+06	0.00e+00	6.03e+06	0.00e+00	5.39e+07
Pd-107	0.00e+00	9.79e+07	6.95e+06	0.00e+00	5.59e+08	0.00e+00	7.78e+07
Pd-109	0.00e+00	4.05e+05	9.78e+04	0.00e+00	1.49e+06	0.00e+00	9.95e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	3.86e+08	2.82e+08	1.86e+08	0.00e+00	4.03e+08	0.00e+00	1.46e+10
Ag-111	6.17e+07	2.40e+07	1.27e+07	0.00e+00	5.01e+07	0.00e+00	5.72e+09
Cd-113m	0.00e+00	1.74e+07	6.42e+05	0.00e+00	1.32e+07	0.00e+00	2.62e+07
Cd-115m	0.00e+00	1.03e+07	3.59e+05	0.00e+00	5.40e+06	0.00e+00	5.89e+07
Sn-123	4.57e+09	7.14e+07	1.19e+08	7.18e+07	0.00e+00	0.00e+00	1.21e+09
Sn-125	5.37e+08	1.00e+07	2.39e+07	9.86e+06	0.00e+00	0.00e+00	8.05e+08
Sn-126	1.14e+10	1.49e+08	3.70e+08	3.93e+07	0.00e+00	0.00e+00	5.18e+08
Sb-124	2.09e+08	3.08e+06	6.49e+07	5.56e+05	0.00e+00	1.31e+08	6.46e+08
Sb-125	1.50e+08	1.45e+06	3.08e+07	1.87e+05	0.00e+00	8.65e+07	1.99e+08
Sb-126	4.20e+07	8.23e+05	1.52e+07	3.22e+05	0.00e+00	2.64e+07	4.35e+08
Sb-127	4.17e+06	7.44e+04	1.29e+06	5.31e+04	0.00e+00	2.15e+06	1.11e+08
Te-125m	1.51e+08	5.04e+07	2.04e+07	5.07e+07	0.00e+00	0.00e+00	7.18e+07
Te-127	6.34e+03	2.13e+03	1.36e+03	5.16e+03	1.55e+04	0.00e+00	1.33e+05
Te-127m	4.21e+08	1.40e+08	5.10e+07	1.22e+08	1.04e+09	0.00e+00	1.70e+08
Te-129	2.81e-09	9.69e-10	6.56e-10	2.36e-09	7.00e-09	0.00e+00	2.25e-07
Te-129m	5.57e+08	1.91e+08	8.58e+07	2.14e+08	1.39e+09	0.00e+00	3.33e+08
Te-131	3.76e-32	1.39e-32	1.05e-32	3.35e-32	9.61e-32	0.00e+00	1.52e-30
Te-131m	3.38e+06	1.36e+06	1.12e+06	2.76e+06	9.36e+06	0.00e+00	2.29e+07
Te-132	2.11e+07	1.05e+07	9.75e+06	1.54e+07	6.54e+07	0.00e+00	3.87e+07
Te-133m	1.98e-12	9.05e-13	8.65e-13	1.74e-12	6.17e-12	0.00e+00	9.76e-11
Te-134	8.25e-18	4.14e-18	4.27e-18	7.39e-18	2.79e-17	0.00e+00	9.46e-17
I-129	7.06e+09	5.23e+09	3.83e+09	3.36e+12	6.19e+09	0.00e+00	1.05e+08
I-130	3.56e+06	7.83e+06	3.14e+06	8.78e+08	8.60e+06	0.00e+00	1.68e+06
I-131	2.72e+09	3.21e+09	1.41e+09	1.05e+12	3.74e+09	0.00e+00	1.14e+08
I-132	1.45e+00	2.95e+00	1.05e+00	1.38e+02	3.29e+00	0.00e+00	2.39e+00
I-133	3.63e+07	5.29e+07	1.55e+07	9.62e+09	6.22e+07	0.00e+00	8.95e+06
I-134	1.84e-11	3.77e-11	1.34e-11	8.78e-10	4.21e-11	0.00e+00	3.89e-11
I-135	1.13e+05	2.25e+05	8.19e+04	2.01e+07	2.50e+05	0.00e+00	8.13e+04
Cs-134	3.65e+10	6.80e+10	6.87e+09	0.00e+00	1.75e+10	7.18e+09	1.85e+08
Cs-134m	1.55e+00	2.58e+00	1.30e+00	0.00e+00	9.94e-01	2.29e-01	2.04e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	1.31e+10	1.19e+10	6.22e+08	0.00e+00	3.40e+09	1.29e+09	4.31e+07
Cs-136	1.98e+09	5.81e+09	2.17e+09	0.00e+00	2.32e+09	4.74e+08	8.83e+07
Cs-137	5.15e+10	6.02e+10	4.27e+09	0.00e+00	1.62e+10	6.55e+09	1.88e+08
Cs-138	9.01e-23	1.47e-22	7.10e-23	0.00e+00	7.31e-23	1.14e-23	2.34e-22
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	4.39e-07	2.91e-10	1.27e-08	0.00e+00	1.75e-10	1.77e-10	2.78e-05
Ba-140	2.41e+08	2.41e+05	1.24e+07	0.00e+00	5.72e+04	1.48e+05	5.92e+07
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	4.06e+01	1.60e+01	4.11e+00	0.00e+00	0.00e+00	0.00e+00	1.88e+05
La-141	2.89e-04	8.39e-05	1.46e-05	0.00e+00	0.00e+00	0.00e+00	9.62e+00
La-142	1.74e-10	6.40e-11	1.53e-11	0.00e+00	0.00e+00	0.00e+00	1.09e-05
Ce-141	4.34e+04	2.64e+04	3.11e+03	0.00e+00	8.15e+03	0.00e+00	1.37e+07
Ce-143	3.97e+02	2.64e+05	3.01e+01	0.00e+00	7.68e+01	0.00e+00	1.54e+06
Ce-144	2.33e+06	9.52e+05	1.30e+05	0.00e+00	3.85e+05	0.00e+00	1.33e+08
Pr-143	1.49e+03	5.55e+02	7.36e+01	0.00e+00	2.06e+02	0.00e+00	7.84e+05
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	8.81e+02	9.05e+02	5.55e+01	0.00e+00	3.49e+02	0.00e+00	5.74e+05
Pm-147	1.57e+04	1.32e+03	6.44e+02	0.00e+00	1.98e+03	0.00e+00	3.75e+05
Pm-148	5.57e+02	8.04e+01	4.05e+01	0.00e+00	9.60e+01	0.00e+00	8.58e+05
Pm-148m	4.90e+03	1.24e+03	9.74e+02	0.00e+00	1.43e+03	0.00e+00	1.62e+06
Pm-149	4.13e+01	5.42e+00	2.37e+00	0.00e+00	6.59e+00	0.00e+00	1.46e+05
Pm-151	6.10e+00	8.90e-01	4.50e-01	0.00e+00	1.06e+00	0.00e+00	4.12e+04
Sm-151	1.19e+04	2.74e+03	5.92e+02	0.00e+00	1.86e+03	0.00e+00	2.29e+05
Sm-153	1.91e+01	1.47e+01	1.13e+00	0.00e+00	3.09e+00	0.00e+00	7.71e+04
Eu-152	2.76e+04	7.34e+03	6.19e+03	0.00e+00	2.06e+04	0.00e+00	6.52e+05
Eu-154	1.09e+05	1.51e+04	9.05e+03	0.00e+00	4.09e+04	0.00e+00	1.88e+06
Eu-155	2.18e+04	2.51e+03	1.30e+03	0.00e+00	5.63e+03	0.00e+00	3.36e+06
Eu-156	2.23e+03	1.38e+03	2.19e+02	0.00e+00	6.37e+02	0.00e+00	1.30e+06
Tb-160	8.75e+03	0.00e+00	1.09e+03	0.00e+00	2.49e+03	0.00e+00	1.17e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	5.14e+04	1.11e+04	8.76e+03	0.00e+00	1.47e+04	0.00e+00	1.09e+06
W-181	3.23e+05	9.91e+04	1.11e+04	0.00e+00	0.00e+00	0.00e+00	1.39e+06
W-185	1.23e+07	3.85e+06	4.39e+05	0.00e+00	0.00e+00	0.00e+00	5.51e+07
W-187	6.09e+04	4.23e+04	1.46e+04	0.00e+00	0.00e+00	0.00e+00	2.49e+06
Pb-210	2.69e+11	7.23e+10	1.21e+10	0.00e+00	2.20e+11	0.00e+00	1.18e+07
Bi-210	3.42e+06	2.20e+07	1.96e+06	0.00e+00	1.71e+08	0.00e+00	4.33e+07
Po-210	6.88e+09	1.32e+10	1.64e+09	0.00e+00	2.80e+10	0.00e+00	1.47e+08
Ra-223	1.15e+12	1.68e+09	2.31e+11	0.00e+00	3.06e+10	0.00e+00	8.97e+09
Ra-224	1.36e+11	3.07e+08	2.72e+10	0.00e+00	5.60e+09	0.00e+00	3.60e+09
Ra-225	1.78e+12	2.01e+09	3.54e+11	0.00e+00	3.66e+10	0.00e+00	9.98e+09
Ra-226	4.08e+13	3.13e+09	3.38e+13	0.00e+00	5.73e+10	0.00e+00	2.26e+10
Ra-228	2.82e+13	1.69e+09	3.18e+13	0.00e+00	3.09e+10	0.00e+00	3.83e+09
Ac-225	5.85e+05	7.51e+05	3.92e+04	0.00e+00	5.51e+04	0.00e+00	6.51e+06
Ac-227	1.84e+08	3.15e+07	1.15e+07	0.00e+00	6.40e+06	0.00e+00	3.49e+06
Th-227	2.61e+06	4.37e+04	7.49e+04	0.00e+00	1.61e+05	0.00e+00	1.24e+07
Th-228	9.94e+07	1.36e+06	3.36e+06	0.00e+00	6.36e+06	0.00e+00	2.35e+07
Th-229	1.04e+09	2.60e+07	1.73e+07	0.00e+00	1.25e+08	0.00e+00	3.33e+06
Th-230	1.56e+08	7.82e+06	4.36e+06	0.00e+00	3.75e+07	0.00e+00	2.57e+06
Th-232	1.74e+08	6.70e+06	6.79e+04	0.00e+00	3.20e+07	0.00e+00	2.18e+06
Th-234	1.70e+04	9.26e+02	4.91e+02	0.00e+00	3.41e+03	0.00e+00	2.92e+06
Pa-231	3.11e+08	1.03e+07	1.24e+07	0.00e+00	5.51e+07	0.00e+00	3.06e+06
Pa-233	8.05e+02	1.58e+02	1.41e+02	0.00e+00	4.32e+02	0.00e+00	3.78e+05
U-232	9.95e+10	0.00e+00	8.88e+09	0.00e+00	9.74e+09	0.00e+00	2.89e+08
U-233	2.09e+10	0.00e+00	1.59e+09	0.00e+00	4.44e+09	0.00e+00	2.68e+08
U-234	2.01e+10	0.00e+00	1.56e+09	0.00e+00	4.36e+09	0.00e+00	2.62e+08
U-235	1.92e+10	0.00e+00	1.46e+09	0.00e+00	4.08e+09	0.00e+00	3.33e+08
U-236	1.92e+10	0.00e+00	1.50e+09	0.00e+00	4.15e+09	0.00e+00	2.46e+08
U-237	5.39e+05	0.00e+00	1.44e+05	0.00e+00	1.34e+06	0.00e+00	2.30e+07
U-238	1.84e+10	0.00e+00	1.37e+09	0.00e+00	3.82e+09	0.00e+00	2.35e+08
Np-237	9.87e+07	6.54e+06	4.32e+06	0.00e+00	2.61e+07	0.00e+00	3.39e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Cow's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	3.49e+02	8.78e+00	5.40e+00	0.00e+00	1.92e+01	0.00e+00	1.17e+05
Np-239	3.65e+01	3.26e+00	1.84e+00	0.00e+00	6.51e+00	0.00e+00	9.44e+04
Pu-238	2.11e+07	2.47e+06	5.59e+05	0.00e+00	1.99e+06	0.00e+00	1.24e+06
Pu-239	2.27e+07	2.55e+06	5.82e+05	0.00e+00	2.11e+06	0.00e+00	1.14e+06
Pu-240	2.27e+07	2.55e+06	5.82e+05	0.00e+00	2.11e+06	0.00e+00	1.16e+06
Pu-241	6.97e+05	2.89e+04	1.45e+04	0.00e+00	5.20e+04	0.00e+00	2.38e+04
Pu-242	2.11e+07	2.45e+06	5.61e+05	0.00e+00	2.02e+06	0.00e+00	1.11e+06
Pu-244	2.45e+07	2.81e+06	6.43e+05	0.00e+00	2.32e+06	0.00e+00	1.66e+06
Am-241	5.95e+07	5.17e+07	4.44e+06	0.00e+00	2.67e+07	0.00e+00	3.14e+06
Am-242m	6.21e+07	5.02e+07	4.65e+06	0.00e+00	2.73e+07	0.00e+00	3.98e+06
Am-243	5.92e+07	5.06e+07	4.36e+06	0.00e+00	2.62e+07	0.00e+00	3.71e+06
Cm-242	5.15e+06	4.77e+06	3.42e+05	0.00e+00	9.84e+05	0.00e+00	3.09e+06
Cm-243	5.75e+07	4.72e+07	3.69e+06	0.00e+00	1.34e+07	0.00e+00	3.33e+06
Cm-244	4.84e+07	3.98e+07	3.11e+06	0.00e+00	1.11e+07	0.00e+00	3.22e+06
Cm-245	7.36e+07	5.96e+07	4.65e+06	0.00e+00	1.78e+07	0.00e+00	3.00e+06
Cm-246	7.28e+07	5.96e+07	4.65e+06	0.00e+00	1.77e+07	0.00e+00	2.95e+06
Cm-247	7.12e+07	5.88e+07	4.57e+06	0.00e+00	1.74e+07	0.00e+00	3.88e+06
Cm-248	5.88e+08	4.85e+08	3.77e+07	0.00e+00	1.44e+08	0.00e+00	6.25e+07
Cf-252	4.93e+07	0.00e+00	1.19e+06	0.00e+00	0.00e+00	0.00e+00	1.21e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

Ri factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.85e+02	1.85e+02	1.85e+02	1.85e+02	1.85e+02	1.85e+02
Be-10	8.72e+06	1.35e+06	2.18e+05	0.00e+00	1.02e+06	0.00e+00	7.35e+07
C-14	2.41e+08	4.83e+07	4.83e+07	4.83e+07	4.83e+07	4.83e+07	4.83e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Na-22	1.39e+09	1.39e+09	1.39e+09	1.39e+09	1.39e+09	1.39e+09	1.39e+09
Na-24	1.39e-03	1.39e-03	1.39e-03	1.39e-03	1.39e-03	1.39e-03	1.39e-03
P-32	4.66e+09	2.90e+08	1.80e+08	0.00e+00	0.00e+00	0.00e+00	5.24e+08
Ca-41	2.03e+09	0.00e+00	2.19e+08	0.00e+00	0.00e+00	0.00e+00	2.02e+06
Sc-46	1.76e+05	3.41e+05	9.91e+04	0.00e+00	3.18e+05	0.00e+00	1.66e+09
Cr-51	0.00e+00	0.00e+00	7.05e+03	4.21e+03	1.55e+03	9.36e+03	1.77e+06
Mn-54	0.00e+00	9.18e+06	1.75e+06	0.00e+00	2.73e+06	0.00e+00	2.81e+07
Mn-56	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Fe-55	2.93e+08	2.03e+08	4.72e+07	0.00e+00	0.00e+00	1.13e+08	1.16e+08
Fe-59	2.66e+08	6.24e+08	2.39e+08	0.00e+00	0.00e+00	1.74e+08	2.08e+09
Co-57	0.00e+00	5.63e+06	9.37e+06	0.00e+00	0.00e+00	0.00e+00	1.43e+08
Co-58	0.00e+00	1.82e+07	4.09e+07	0.00e+00	0.00e+00	0.00e+00	3.70e+08
Co-60	0.00e+00	7.52e+07	1.66e+08	0.00e+00	0.00e+00	0.00e+00	1.41e+09
Ni-59	1.42e+08	4.87e+07	2.37e+07	0.00e+00	0.00e+00	0.00e+00	1.00e+07
Ni-63	1.89e+09	1.31e+08	6.33e+07	0.00e+00	0.00e+00	0.00e+00	2.73e+07
Ni-65	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cu-64	0.00e+00	2.80e-07	1.31e-07	0.00e+00	7.05e-07	0.00e+00	2.38e-05
Zn-65	3.56e+08	1.13e+09	5.12e+08	0.00e+00	7.57e+08	0.00e+00	7.13e+08
Zn-69	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-69m	1.87e-05	4.48e-05	4.10e-06	0.00e+00	2.71e-05	0.00e+00	2.73e-03
Se-79	0.00e+00	1.08e+08	1.81e+07	0.00e+00	1.87e+08	0.00e+00	2.21e+07
Br-82	0.00e+00	0.00e+00	1.23e+03	0.00e+00	0.00e+00	0.00e+00	1.41e+03
Br-83	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	4.88e+08	2.27e+08	0.00e+00	0.00e+00	0.00e+00	9.61e+07
Rb-87	0.00e+00	1.05e+09	3.64e+08	0.00e+00	0.00e+00	0.00e+00	4.90e+07
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	3.02e+08	0.00e+00	8.66e+06	0.00e+00	0.00e+00	0.00e+00	4.84e+07
Sr-90	1.43e+10	0.00e+00	2.87e+08	0.00e+00	0.00e+00	0.00e+00	3.59e+08
Sr-91	1.58e-10	0.00e+00	6.39e-12	0.00e+00	0.00e+00	0.00e+00	7.53e-10
Sr-92	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-90	1.08e+02	0.00e+00	2.90e+00	0.00e+00	0.00e+00	0.00e+00	1.15e+06
Y-91	1.13e+06	0.00e+00	3.03e+04	0.00e+00	0.00e+00	0.00e+00	6.23e+08
Y-91m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-92	1.69e-39	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	2.96e-35
Y-93	4.87e-12	0.00e+00	1.35e-13	0.00e+00	0.00e+00	0.00e+00	1.55e-07
Zr-93	3.90e+06	2.18e+05	1.02e+05	0.00e+00	8.27e+05	0.00e+00	2.27e+08
Zr-95	1.87e+06	6.01e+05	4.07e+05	0.00e+00	9.43e+05	0.00e+00	1.90e+09
Zr-97	2.11e-05	4.27e-06	1.95e-06	0.00e+00	6.44e-06	0.00e+00	1.32e+00
Nb-93m	1.95e+07	6.35e+06	1.57e+06	0.00e+00	7.31e+06	0.00e+00	2.93e+09
Nb-95	2.30e+06	1.28e+06	6.87e+05	0.00e+00	1.26e+06	0.00e+00	7.76e+09
Nb-97	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mo-93	0.00e+00	1.65e+08	4.45e+06	0.00e+00	4.67e+07	0.00e+00	2.68e+07
Mo-99	0.00e+00	1.01e+05	1.91e+04	0.00e+00	2.28e+05	0.00e+00	2.33e+05
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	1.37e+08	2.04e+08	5.51e+07	0.00e+00	2.57e+09	1.73e+07	6.67e+09
Tc-99m	4.74e-21	1.34e-20	1.71e-19	0.00e+00	2.04e-19	6.57e-21	7.93e-18
Ru-103	1.05e+08	0.00e+00	4.53e+07	0.00e+00	4.02e+08	0.00e+00	1.23e+10
Ru-105	6.30e-28	0.00e+00	2.49e-28	0.00e+00	8.14e-27	0.00e+00	3.85e-25
Ru-106	2.80e+09	0.00e+00	3.54e+08	0.00e+00	5.40e+09	0.00e+00	1.81e+11
Rh-105	3.79e+00	2.78e+00	1.83e+00	0.00e+00	1.18e+01	0.00e+00	4.42e+02
Pd-107	0.00e+00	1.61e+06	1.03e+05	0.00e+00	1.45e+07	0.00e+00	9.99e+06
Pd-109	0.00e+00	1.49e-06	3.35e-07	0.00e+00	8.47e-06	0.00e+00	1.64e-04

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	6.68e+06	6.18e+06	3.67e+06	0.00e+00	1.22e+07	0.00e+00	2.52e+09
Ag-111	1.46e+05	6.12e+04	3.05e+04	0.00e+00	1.97e+05	0.00e+00	1.12e+08
Cd-113m	0.00e+00	4.60e+06	1.47e+05	0.00e+00	5.06e+06	0.00e+00	3.70e+07
Cd-115m	0.00e+00	1.49e+06	4.76e+04	0.00e+00	1.18e+06	0.00e+00	6.27e+07
Sn-123	5.53e+09	9.15e+07	1.35e+08	7.78e+07	0.00e+00	0.00e+00	1.13e+10
Sn-125	1.76e+08	3.55e+06	7.99e+06	2.94e+06	0.00e+00	0.00e+00	2.20e+09
Sn-126	1.85e+10	3.66e+08	5.27e+08	1.08e+08	0.00e+00	0.00e+00	5.33e+09
Sb-124	1.98e+07	3.74e+05	7.85e+06	4.80e+04	0.00e+00	1.54e+07	5.62e+08
Sb-125	1.91e+07	2.13e+05	4.55e+06	1.94e+04	0.00e+00	1.47e+07	2.10e+08
Sb-126	1.96e+06	3.99e+04	7.08e+05	1.20e+04	0.00e+00	1.20e+06	1.60e+08
Sb-127	1.71e+04	3.75e+02	6.58e+03	2.06e+02	0.00e+00	1.02e+04	3.92e+06
Te-125m	3.59e+08	1.30e+08	4.81e+07	1.08e+08	1.46e+09	0.00e+00	1.43e+09
Te-127	2.21e-10	7.94e-11	4.78e-11	1.64e-10	9.01e-10	0.00e+00	1.74e-08
Te-127m	1.12e+09	3.99e+08	1.36e+08	2.85e+08	4.53e+09	0.00e+00	3.74e+09
Te-129	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-129m	1.13e+09	4.23e+08	1.80e+08	3.90e+08	4.74e+09	0.00e+00	5.71e+09
Te-131	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-131m	4.57e+02	2.23e+02	1.86e+02	3.54e+02	2.26e+03	0.00e+00	2.22e+04
Te-132	1.43e+06	9.23e+05	8.66e+05	1.02e+06	8.89e+06	0.00e+00	4.36e+07
Te-133m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-129	1.30e+08	1.12e+08	3.66e+08	2.87e+11	2.40e+08	0.00e+00	1.77e+07
I-130	2.18e-06	6.42e-06	2.53e-06	5.44e-04	1.00e-05	0.00e+00	5.52e-06
I-131	1.08e+07	1.54e+07	8.82e+06	5.04e+09	2.64e+07	0.00e+00	4.06e+06
I-132	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-133	3.72e-01	6.47e-01	1.97e-01	9.51e+01	1.13e+00	0.00e+00	5.82e-01
I-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-135	4.69e-17	1.23e-16	4.53e-17	8.10e-15	1.97e-16	0.00e+00	1.39e-16
Cs-134	6.58e+08	1.56e+09	1.28e+09	0.00e+00	5.06e+08	1.68e+08	2.74e+07
Cs-134m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	2.14e+08	1.97e+08	8.76e+07	0.00e+00	7.47e+07	2.24e+07	4.62e+06
Cs-136	1.21e+07	4.76e+07	3.43e+07	0.00e+00	2.65e+07	3.63e+06	5.41e+06
Cs-137	8.72e+08	1.19e+09	7.81e+08	0.00e+00	4.05e+08	1.35e+08	2.31e+07
Cs-138	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-140	2.88e+07	3.61e+04	1.88e+06	0.00e+00	1.23e+04	2.07e+04	5.92e+07
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	3.75e-02	1.89e-02	4.99e-03	0.00e+00	0.00e+00	0.00e+00	1.39e+03
La-141	3.46e-37	1.07e-37	1.76e-38	0.00e+00	0.00e+00	0.00e+00	1.28e-32
La-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-141	1.41e+04	9.50e+03	1.08e+03	0.00e+00	4.41e+03	0.00e+00	3.63e+07
Ce-143	2.03e-02	1.50e+01	1.66e-03	0.00e+00	6.61e-03	0.00e+00	5.61e+02
Ce-144	1.46e+06	6.09e+05	7.83e+04	0.00e+00	3.61e+05	0.00e+00	4.93e+08
Pr-143	2.10e+04	8.42e+03	1.04e+03	0.00e+00	4.86e+03	0.00e+00	9.19e+07
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	7.08e+03	8.18e+03	4.90e+02	0.00e+00	4.78e+03	0.00e+00	3.93e+07
Pm-147	9.64e+05	9.07e+04	3.67e+04	0.00e+00	1.71e+05	0.00e+00	1.14e+08
Pm-148	1.98e+03	3.29e+02	1.65e+02	0.00e+00	6.21e+02	0.00e+00	2.58e+07
Pm-148m	2.16e+05	5.59e+04	4.27e+04	0.00e+00	8.43e+04	0.00e+00	4.74e+08
Pm-149	5.15e+00	7.28e-01	2.97e-01	0.00e+00	1.37e+00	0.00e+00	1.36e+05
Pm-151	5.64e-03	9.46e-04	4.78e-04	0.00e+00	1.69e-03	0.00e+00	2.60e+02
Sm-151	9.45e+05	1.63e+05	3.90e+04	0.00e+00	1.82e+05	0.00e+00	7.19e+07
Sm-153	1.17e+00	9.80e-01	7.15e-02	0.00e+00	3.17e-01	0.00e+00	3.49e+04
Eu-152	2.55e+06	5.81e+05	5.10e+05	0.00e+00	3.60e+06	0.00e+00	3.35e+08
Eu-154	8.09e+06	9.95e+05	7.08e+05	0.00e+00	4.76e+06	0.00e+00	7.21e+08
Eu-155	1.09e+06	1.54e+05	9.93e+04	0.00e+00	7.10e+05	0.00e+00	1.21e+08
Eu-156	3.77e+04	2.92e+04	4.71e+03	0.00e+00	1.95e+04	0.00e+00	2.00e+08
Tb-160	3.92e+05	0.00e+00	4.89e+04	0.00e+00	1.62e+05	0.00e+00	3.61e+08

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	3.26e+06	1.02e+06	7.72e+05	0.00e+00	1.52e+06	0.00e+00	3.09e+08
W-181	3.02e+04	9.84e+03	1.05e+03	0.00e+00	0.00e+00	0.00e+00	1.12e+06
W-185	1.08e+06	3.61e+05	3.79e+04	0.00e+00	0.00e+00	0.00e+00	4.17e+07
W-187	2.25e-02	1.88e-02	6.56e-03	0.00e+00	0.00e+00	0.00e+00	6.15e+00
Pb-210	1.21e+10	3.46e+09	4.31e+08	0.00e+00	9.75e+09	0.00e+00	1.77e+06
Bi-210	2.72e+05	1.88e+06	1.56e+05	0.00e+00	2.26e+07	0.00e+00	2.80e+07
Po-210	9.62e+09	2.04e+10	2.32e+09	0.00e+00	6.81e+10	0.00e+00	1.72e+09
Ra-223	6.16e+10	9.49e+07	1.23e+10	0.00e+00	2.69e+09	0.00e+00	3.98e+09
Ra-224	7.05e+08	1.71e+06	1.41e+08	0.00e+00	4.81e+07	0.00e+00	1.49e+08
Ra-225	1.23e+11	1.46e+08	2.46e+10	0.00e+00	4.15e+09	0.00e+00	5.75e+09
Ra-226	2.82e+13	5.35e+08	2.05e+13	0.00e+00	1.52e+10	0.00e+00	3.10e+10
Ra-228	1.03e+13	2.87e+08	1.11e+13	0.00e+00	8.12e+09	0.00e+00	5.19e+09
Ac-225	7.54e+07	1.04e+08	5.07e+06	0.00e+00	1.18e+07	0.00e+00	6.98e+09
Ac-227	3.07e+11	4.07e+10	1.82e+10	0.00e+00	1.31e+10	0.00e+00	1.34e+10
Th-227	2.02e+06	3.66e+04	5.83e+04	0.00e+00	2.08e+05	0.00e+00	7.97e+07
Th-228	2.61e+08	4.43e+06	8.85e+06	0.00e+00	2.46e+07	0.00e+00	2.97e+08
Th-229	7.46e+09	2.13e+08	1.23e+08	0.00e+00	1.03e+09	0.00e+00	4.28e+07
Th-230	1.13e+09	6.42e+07	3.13e+07	0.00e+00	3.10e+08	0.00e+00	3.30e+07
Th-232	1.26e+09	5.48e+07	8.23e+05	0.00e+00	2.64e+08	0.00e+00	2.81e+07
Th-234	1.56e+04	9.19e+02	4.51e+02	0.00e+00	5.21e+03	0.00e+00	2.21e+07
Pa-231	8.99e+15	3.38e+14	3.49e+14	0.00e+00	1.90e+15	0.00e+00	1.57e+14
Pa-233	4.60e+09	9.28e+08	7.98e+08	0.00e+00	3.49e+09	0.00e+00	1.44e+13
U-232	3.85e+09	0.00e+00	2.75e+08	0.00e+00	4.16e+08	0.00e+00	6.31e+07
U-233	8.12e+08	0.00e+00	4.92e+07	0.00e+00	1.89e+08	0.00e+00	5.85e+07
U-234	7.79e+08	0.00e+00	4.82e+07	0.00e+00	1.86e+08	0.00e+00	5.72e+07
U-235	7.47e+08	0.00e+00	4.53e+07	0.00e+00	1.74e+08	0.00e+00	7.28e+07
U-236	7.47e+08	0.00e+00	4.62e+07	0.00e+00	1.78e+08	0.00e+00	5.37e+07
U-237	2.15e+03	0.00e+00	5.72e+02	0.00e+00	8.83e+03	0.00e+00	7.55e+05
U-238	7.15e+08	0.00e+00	4.23e+07	0.00e+00	1.63e+08	0.00e+00	5.13e+07
Np-237	6.91e+08	4.91e+07	3.04e+07	0.00e+00	2.26e+08	0.00e+00	4.35e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	1.43e+00	3.85e-02	2.22e-02	0.00e+00	1.30e-01	0.00e+00	3.58e+03
Np-239	2.61e-01	2.57e-02	1.41e-02	0.00e+00	8.00e-02	0.00e+00	5.26e+03
Pu-238	2.42e+07	3.06e+06	6.56e+05	0.00e+00	2.81e+06	0.00e+00	2.80e+06
Pu-239	2.78e+07	3.34e+06	7.33e+05	0.00e+00	3.11e+06	0.00e+00	2.56e+06
Pu-240	2.78e+07	3.34e+06	7.33e+05	0.00e+00	3.11e+06	0.00e+00	2.60e+06
Pu-241	6.00e+05	2.85e+04	1.27e+04	0.00e+00	5.84e+04	0.00e+00	5.35e+04
Pu-242	2.58e+07	3.22e+06	7.06e+05	0.00e+00	3.00e+06	0.00e+00	2.51e+06
Pu-244	3.01e+07	3.69e+06	8.10e+05	0.00e+00	3.44e+06	0.00e+00	3.74e+06
Am-241	4.07e+08	3.80e+08	2.92e+07	0.00e+00	2.19e+08	0.00e+00	4.00e+07
Am-242m	4.17e+08	3.63e+08	2.98e+07	0.00e+00	2.22e+08	0.00e+00	5.12e+07
Am-243	4.14e+08	3.78e+08	2.91e+07	0.00e+00	2.19e+08	0.00e+00	4.77e+07
Cm-242	9.56e+06	1.02e+07	6.36e+05	0.00e+00	2.89e+06	0.00e+00	3.67e+07
Cm-243	3.28e+08	3.00e+08	2.05e+07	0.00e+00	9.57e+07	0.00e+00	4.27e+07
Cm-244	2.49e+08	2.33e+08	1.57e+07	0.00e+00	7.32e+07	0.00e+00	4.12e+07
Cm-245	5.14e+08	4.48e+08	3.16e+07	0.00e+00	1.48e+08	0.00e+00	3.86e+07
Cm-246	5.10e+08	4.48e+08	3.15e+07	0.00e+00	1.47e+08	0.00e+00	3.79e+07
Cm-247	4.97e+08	4.41e+08	3.11e+07	0.00e+00	1.45e+08	0.00e+00	4.99e+07
Cm-248	4.14e+09	3.64e+09	2.56e+08	0.00e+00	1.20e+09	0.00e+00	8.06e+08
Cf-252	1.39e+08	0.00e+00	3.34e+06	0.00e+00	0.00e+00	0.00e+00	1.53e+08

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.10e+02	1.10e+02	1.10e+02	1.10e+02	1.10e+02	1.10e+02
Be-10	7.26e+06	1.12e+06	1.83e+05	0.00e+00	8.59e+05	0.00e+00	4.60e+07
C-14	2.04e+08	4.08e+07	4.08e+07	4.08e+07	4.08e+07	4.08e+07	4.08e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Na-22	1.10e+09	1.10e+09	1.10e+09	1.10e+09	1.10e+09	1.10e+09	1.10e+09
Na-24	1.11e-03	1.11e-03	1.11e-03	1.11e-03	1.11e-03	1.11e-03	1.11e-03
P-32	3.94e+09	2.44e+08	1.53e+08	0.00e+00	0.00e+00	0.00e+00	3.31e+08
Ca-41	1.28e+09	0.00e+00	1.38e+08	0.00e+00	0.00e+00	0.00e+00	1.26e+06
Sc-46	1.36e+05	2.65e+05	7.87e+04	0.00e+00	2.54e+05	0.00e+00	9.04e+08
Cr-51	0.00e+00	0.00e+00	5.64e+03	3.13e+03	1.24e+03	8.05e+03	9.48e+05
Mn-54	0.00e+00	7.00e+06	1.39e+06	0.00e+00	2.09e+06	0.00e+00	1.44e+07
Mn-56	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Fe-55	2.38e+08	1.69e+08	3.94e+07	0.00e+00	0.00e+00	1.07e+08	7.31e+07
Fe-59	2.12e+08	4.95e+08	1.91e+08	0.00e+00	0.00e+00	1.56e+08	1.17e+09
Co-57	0.00e+00	4.53e+06	7.59e+06	0.00e+00	0.00e+00	0.00e+00	8.45e+07
Co-58	0.00e+00	1.41e+07	3.24e+07	0.00e+00	0.00e+00	0.00e+00	1.94e+08
Co-60	0.00e+00	5.83e+07	1.31e+08	0.00e+00	0.00e+00	0.00e+00	7.60e+08
Ni-59	1.13e+08	4.00e+07	1.92e+07	0.00e+00	0.00e+00	0.00e+00	6.28e+06
Ni-63	1.52e+09	1.07e+08	5.15e+07	0.00e+00	0.00e+00	0.00e+00	1.71e+07
Ni-65	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cu-64	0.00e+00	2.28e-07	1.07e-07	0.00e+00	5.77e-07	0.00e+00	1.77e-05
Zn-65	2.50e+08	8.69e+08	4.05e+08	0.00e+00	5.56e+08	0.00e+00	3.68e+08
Zn-69	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-69m	1.56e-05	3.67e-05	3.37e-06	0.00e+00	2.23e-05	0.00e+00	2.02e-03
Se-79	0.00e+00	9.07e+07	1.52e+07	0.00e+00	1.58e+08	0.00e+00	1.39e+07
Br-82	0.00e+00	0.00e+00	9.76e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	4.07e+08	1.91e+08	0.00e+00	0.00e+00	0.00e+00	6.02e+07
Rb-87	0.00e+00	8.79e+08	3.07e+08	0.00e+00	0.00e+00	0.00e+00	3.07e+07
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	2.55e+08	0.00e+00	7.29e+06	0.00e+00	0.00e+00	0.00e+00	3.03e+07
Sr-90	9.89e+09	0.00e+00	1.98e+08	0.00e+00	0.00e+00	0.00e+00	2.26e+08
Sr-91	1.33e-10	0.00e+00	5.29e-12	0.00e+00	0.00e+00	0.00e+00	6.03e-10
Sr-92	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-90	9.11e+01	0.00e+00	2.45e+00	0.00e+00	0.00e+00	0.00e+00	7.52e+05
Y-91	9.54e+05	0.00e+00	2.56e+04	0.00e+00	0.00e+00	0.00e+00	3.91e+08
Y-91m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-92	1.43e-39	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	3.93e-35
Y-93	4.11e-12	0.00e+00	1.13e-13	0.00e+00	0.00e+00	0.00e+00	1.26e-07
Zr-93	3.05e+06	1.50e+05	8.21e+04	0.00e+00	5.32e+05	0.00e+00	1.42e+08
Zr-95	1.50e+06	4.73e+05	3.25e+05	0.00e+00	6.95e+05	0.00e+00	1.09e+09
Zr-97	1.76e-05	3.49e-06	1.61e-06	0.00e+00	5.29e-06	0.00e+00	9.44e-01
Nb-93m	1.55e+07	5.10e+06	1.28e+06	0.00e+00	5.96e+06	0.00e+00	1.84e+09
Nb-95	1.79e+06	9.96e+05	5.48e+05	0.00e+00	9.65e+05	0.00e+00	4.26e+09
Nb-97	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mo-93	0.00e+00	1.37e+08	3.76e+06	0.00e+00	3.94e+07	0.00e+00	1.67e+07
Mo-99	0.00e+00	8.31e+04	1.59e+04	0.00e+00	1.90e+05	0.00e+00	1.49e+05
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	1.16e+08	1.70e+08	4.65e+07	0.00e+00	2.16e+09	1.76e+07	4.17e+09
Tc-99m	3.77e-21	1.05e-20	1.36e-19	0.00e+00	1.57e-19	5.83e-21	6.90e-18
Ru-103	8.57e+07	0.00e+00	3.66e+07	0.00e+00	3.02e+08	0.00e+00	7.16e+09
Ru-105	5.27e-28	0.00e+00	2.04e-28	0.00e+00	6.65e-27	0.00e+00	4.25e-25
Ru-106	2.36e+09	0.00e+00	2.97e+08	0.00e+00	4.55e+09	0.00e+00	1.13e+11
Rh-105	3.21e+00	2.32e+00	1.52e+00	0.00e+00	9.84e+00	0.00e+00	2.95e+02
Pd-107	0.00e+00	1.35e+06	8.69e+04	0.00e+00	1.22e+07	0.00e+00	6.26e+06
Pd-109	0.00e+00	1.24e-06	2.83e-07	0.00e+00	7.19e-06	0.00e+00	1.25e-04

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	5.06e+06	4.79e+06	2.91e+06	0.00e+00	9.13e+06	0.00e+00	1.34e+09
Ag-111	1.23e+05	5.12e+04	2.57e+04	0.00e+00	1.67e+05	0.00e+00	7.14e+07
Cd-113m	0.00e+00	3.85e+06	1.24e+05	0.00e+00	4.26e+06	0.00e+00	2.32e+07
Cd-115m	0.00e+00	1.25e+06	4.02e+04	0.00e+00	9.96e+05	0.00e+00	3.94e+07
Sn-123	4.66e+09	7.66e+07	1.13e+08	6.13e+07	0.00e+00	0.00e+00	7.05e+09
Sn-125	1.49e+08	2.96e+06	6.71e+06	2.32e+06	0.00e+00	0.00e+00	1.40e+09
Sn-126	1.50e+10	2.80e+08	4.28e+08	7.38e+07	0.00e+00	0.00e+00	3.34e+09
Sb-124	1.62e+07	2.98e+05	6.31e+06	3.67e+04	0.00e+00	1.41e+07	3.26e+08
Sb-125	1.56e+07	1.71e+05	3.66e+06	1.49e+04	0.00e+00	1.37e+07	1.22e+08
Sb-126	1.60e+06	3.28e+04	5.76e+05	9.07e+03	0.00e+00	1.15e+06	9.49e+07
Sb-127	1.43e+04	3.05e+02	5.38e+03	1.60e+02	0.00e+00	9.70e+03	2.42e+06
Te-125m	3.03e+08	1.09e+08	4.05e+07	8.47e+07	0.00e+00	0.00e+00	8.94e+08
Te-127	1.88e-10	6.65e-11	4.04e-11	1.29e-10	7.60e-10	0.00e+00	1.45e-08
Te-127m	9.42e+08	3.34e+08	1.12e+08	2.24e+08	3.82e+09	0.00e+00	2.35e+09
Te-129	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-129m	9.50e+08	3.53e+08	1.50e+08	3.07e+08	3.98e+09	0.00e+00	3.57e+09
Te-131	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-131m	3.81e+02	1.83e+02	1.52e+02	2.75e+02	1.90e+03	0.00e+00	1.47e+04
Te-132	1.17e+06	7.39e+05	6.96e+05	7.79e+05	7.09e+06	0.00e+00	2.34e+07
Te-133m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-129	1.09e+08	9.21e+07	1.54e+08	1.12e+11	1.65e+08	0.00e+00	1.07e+07
I-130	1.75e-06	5.07e-06	2.02e-06	4.13e-04	7.80e-06	0.00e+00	3.89e-06
I-131	8.94e+06	1.25e+07	6.72e+06	3.65e+09	2.15e+07	0.00e+00	2.48e+06
I-132	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-133	3.11e-01	5.28e-01	1.61e-01	7.37e+01	9.26e-01	0.00e+00	3.99e-01
I-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-135	3.82e-17	9.82e-17	3.64e-17	6.32e-15	1.55e-16	0.00e+00	1.09e-16
Cs-134	5.23e+08	1.23e+09	5.71e+08	0.00e+00	3.91e+08	1.49e+08	1.53e+07
Cs-134m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	1.80e+08	1.65e+08	3.86e+07	0.00e+00	6.31e+07	2.28e+07	2.89e+06
Cs-136	9.41e+06	3.70e+07	2.49e+07	0.00e+00	2.02e+07	3.18e+06	2.98e+06
Cs-137	7.24e+08	9.63e+08	3.36e+08	0.00e+00	3.28e+08	1.27e+08	1.37e+07
Cs-138	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-140	2.38e+07	2.91e+04	1.53e+06	0.00e+00	9.88e+03	1.96e+04	3.67e+07
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	3.08e-02	1.51e-02	4.03e-03	0.00e+00	0.00e+00	0.00e+00	8.69e+02
La-141	2.92e-37	8.97e-38	1.48e-38	0.00e+00	0.00e+00	0.00e+00	1.59e-32
La-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-141	1.18e+04	7.88e+03	9.05e+02	0.00e+00	3.71e+03	0.00e+00	2.25e+07
Ce-143	1.71e-02	1.24e+01	1.39e-03	0.00e+00	5.58e-03	0.00e+00	3.74e+02
Ce-144	1.23e+06	5.08e+05	6.60e+04	0.00e+00	3.04e+05	0.00e+00	3.09e+08
Pr-143	1.77e+04	7.05e+03	8.79e+02	0.00e+00	4.10e+03	0.00e+00	5.81e+07
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	6.24e+03	6.78e+03	4.06e+02	0.00e+00	3.98e+03	0.00e+00	2.45e+07
Pm-147	7.93e+05	7.53e+04	3.07e+04	0.00e+00	1.44e+05	0.00e+00	7.16e+07
Pm-148	1.66e+03	2.71e+02	1.36e+02	0.00e+00	4.89e+02	0.00e+00	1.62e+07
Pm-148m	1.72e+05	4.36e+04	3.41e+04	0.00e+00	6.60e+04	0.00e+00	2.74e+08
Pm-149	4.34e+00	6.10e-01	2.50e-01	0.00e+00	1.16e+00	0.00e+00	8.98e+04
Pm-151	4.72e-03	7.79e-04	3.94e-04	0.00e+00	1.40e-03	0.00e+00	1.75e+02
Sm-151	7.07e+05	1.36e+05	3.19e+04	0.00e+00	1.49e+05	0.00e+00	4.61e+07
Sm-153	9.88e-01	8.18e-01	6.02e-02	0.00e+00	2.67e-01	0.00e+00	2.31e+04
Eu-152	1.89e+06	4.56e+05	4.02e+05	0.00e+00	2.12e+06	0.00e+00	1.68e+08
Eu-154	6.15e+06	7.93e+05	5.59e+05	0.00e+00	3.55e+06	0.00e+00	4.19e+08
Eu-155	1.30e+06	1.25e+05	7.76e+04	0.00e+00	4.90e+05	0.00e+00	7.18e+08
Eu-156	3.12e+04	2.34e+04	3.82e+03	0.00e+00	1.58e+04	0.00e+00	1.20e+08
Tb-160	3.19e+05	0.00e+00	3.98e+04	0.00e+00	1.26e+05	0.00e+00	2.06e+08

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	2.55e+06	7.84e+05	5.68e+05	0.00e+00	1.15e+06	0.00e+00	1.93e+08
W-181	2.56e+04	8.25e+03	8.62e+02	0.00e+00	0.00e+00	0.00e+00	7.02e+05
W-185	9.14e+05	3.01e+05	3.19e+04	0.00e+00	0.00e+00	0.00e+00	2.60e+07
W-187	1.88e-02	1.53e-02	5.37e-03	0.00e+00	0.00e+00	0.00e+00	4.15e+00
Pb-210	8.47e+09	2.55e+09	3.28e+08	0.00e+00	8.05e+09	0.00e+00	1.11e+06
Bi-210	2.30e+05	1.57e+06	1.32e+05	0.00e+00	1.91e+07	0.00e+00	1.80e+07
Po-210	8.13e+09	1.71e+10	1.96e+09	0.00e+00	5.75e+10	0.00e+00	1.08e+09
Ra-223	5.21e+10	7.92e+07	1.04e+10	0.00e+00	2.27e+09	0.00e+00	2.51e+09
Ra-224	5.97e+08	1.43e+06	1.19e+08	0.00e+00	4.09e+07	0.00e+00	9.59e+07
Ra-225	1.04e+11	1.22e+08	2.08e+10	0.00e+00	3.50e+09	0.00e+00	3.63e+09
Ra-226	1.77e+13	4.48e+08	1.32e+13	0.00e+00	1.28e+10	0.00e+00	1.93e+10
Ra-228	7.45e+12	2.40e+08	8.21e+12	0.00e+00	6.85e+09	0.00e+00	3.25e+09
Ac-225	6.37e+07	8.70e+07	4.27e+06	0.00e+00	9.98e+06	0.00e+00	4.42e+09
Ac-227	1.99e+11	2.94e+10	1.18e+10	0.00e+00	8.54e+09	0.00e+00	8.41e+09
Th-227	1.71e+06	3.07e+04	4.93e+04	0.00e+00	1.75e+05	0.00e+00	5.01e+07
Th-228	2.12e+08	3.55e+06	7.16e+06	0.00e+00	2.00e+07	0.00e+00	1.86e+08
Th-229	4.63e+09	1.33e+08	7.68e+07	0.00e+00	6.45e+08	0.00e+00	2.68e+07
Th-230	7.00e+08	3.99e+07	1.94e+07	0.00e+00	1.94e+08	0.00e+00	2.07e+07
Th-232	7.84e+08	3.40e+07	5.28e+05	0.00e+00	1.66e+08	0.00e+00	1.76e+07
Th-234	1.31e+04	7.70e+02	3.82e+02	0.00e+00	4.39e+03	0.00e+00	1.40e+07
Pa-231	5.59e+15	2.10e+14	2.18e+14	0.00e+00	1.18e+15	0.00e+00	9.85e+13
Pa-233	3.79e+09	7.29e+08	6.52e+08	0.00e+00	2.75e+09	0.00e+00	8.33e+12
U-232	3.24e+09	0.00e+00	2.32e+08	0.00e+00	3.51e+08	0.00e+00	3.96e+07
U-233	6.83e+08	0.00e+00	4.15e+07	0.00e+00	1.60e+08	0.00e+00	3.66e+07
U-234	6.56e+08	0.00e+00	4.07e+07	0.00e+00	1.57e+08	0.00e+00	3.59e+07
U-235	6.28e+08	0.00e+00	3.82e+07	0.00e+00	1.47e+08	0.00e+00	4.56e+07
U-236	6.28e+08	0.00e+00	3.91e+07	0.00e+00	1.50e+08	0.00e+00	3.37e+07
U-237	1.81e+03	0.00e+00	4.83e+02	0.00e+00	7.45e+03	0.00e+00	4.80e+05
U-238	6.01e+08	0.00e+00	3.58e+07	0.00e+00	1.38e+08	0.00e+00	3.21e+07
Np-237	4.31e+08	3.10e+07	1.90e+07	0.00e+00	1.40e+08	0.00e+00	2.73e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	1.20e+00	3.22e-02	1.87e-02	0.00e+00	1.10e-01	0.00e+00	2.36e+03
Np-239	2.28e-01	2.15e-02	1.19e-02	0.00e+00	6.75e-02	0.00e+00	3.46e+03
Pu-238	1.52e+07	1.94e+06	4.13e+05	0.00e+00	1.77e+06	0.00e+00	1.75e+06
Pu-239	1.74e+07	2.11e+06	4.56e+05	0.00e+00	1.94e+06	0.00e+00	1.60e+06
Pu-240	1.73e+07	2.10e+06	4.56e+05	0.00e+00	1.94e+06	0.00e+00	1.63e+06
Pu-241	3.95e+05	1.90e+04	8.33e+03	0.00e+00	3.86e+04	0.00e+00	3.34e+04
Pu-242	1.61e+07	2.03e+06	4.40e+05	0.00e+00	1.87e+06	0.00e+00	1.57e+06
Pu-244	1.88e+07	2.31e+06	5.04e+05	0.00e+00	2.14e+06	0.00e+00	2.34e+06
Am-241	2.54e+08	2.40e+08	1.83e+07	0.00e+00	1.37e+08	0.00e+00	2.51e+07
Am-242m	2.61e+08	2.30e+08	1.88e+07	0.00e+00	1.39e+08	0.00e+00	3.21e+07
Am-243	2.58e+08	2.38e+08	1.82e+07	0.00e+00	1.37e+08	0.00e+00	2.99e+07
Cm-242	8.06e+06	8.50e+06	5.35e+05	0.00e+00	2.44e+06	0.00e+00	2.30e+07
Cm-243	2.10e+08	1.95e+08	1.32e+07	0.00e+00	6.17e+07	0.00e+00	2.68e+07
Cm-244	1.63e+08	1.54e+08	1.03e+07	0.00e+00	4.81e+07	0.00e+00	2.58e+07
Cm-245	3.21e+08	2.82e+08	1.98e+07	0.00e+00	9.24e+07	0.00e+00	2.42e+07
Cm-246	3.18e+08	2.82e+08	1.97e+07	0.00e+00	9.20e+07	0.00e+00	2.38e+07
Cm-247	3.10e+08	2.78e+08	1.94e+07	0.00e+00	9.07e+07	0.00e+00	3.12e+07
Cm-248	2.58e+09	2.29e+09	1.60e+08	0.00e+00	7.49e+08	0.00e+00	5.02e+08
Cf-252	1.09e+08	0.00e+00	2.63e+06	0.00e+00	0.00e+00	0.00e+00	9.58e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

Ri factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.34e+02	1.34e+02	1.34e+02	1.34e+02	1.34e+02	1.34e+02
Be-10	1.38e+07	1.60e+06	3.46e+05	0.00e+00	1.13e+06	0.00e+00	2.81e+07
C-14	3.83e+08	7.67e+07	7.67e+07	7.67e+07	7.67e+07	7.67e+07	7.67e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Na-22	1.75e+09	1.75e+09	1.75e+09	1.75e+09	1.75e+09	1.75e+09	1.75e+09
Na-24	1.77e-03	1.77e-03	1.77e-03	1.77e-03	1.77e-03	1.77e-03	1.77e-03
P-32	7.43e+09	3.47e+08	2.86e+08	0.00e+00	0.00e+00	0.00e+00	2.05e+08
Ca-41	1.42e+09	0.00e+00	1.55e+08	0.00e+00	0.00e+00	0.00e+00	7.77e+05
Sc-46	2.34e+05	3.21e+05	1.24e+05	0.00e+00	2.84e+05	0.00e+00	4.69e+08
Cr-51	0.00e+00	0.00e+00	8.79e+03	4.88e+03	1.33e+03	8.91e+03	4.66e+05
Mn-54	0.00e+00	8.01e+06	2.13e+06	0.00e+00	2.25e+06	0.00e+00	6.72e+06
Mn-56	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Fe-55	4.57e+08	2.42e+08	7.51e+07	0.00e+00	0.00e+00	1.37e+08	4.49e+07
Fe-59	3.76e+08	6.09e+08	3.03e+08	0.00e+00	0.00e+00	1.77e+08	6.34e+08
Co-57	0.00e+00	5.92e+06	1.20e+07	0.00e+00	0.00e+00	0.00e+00	4.85e+07
Co-58	0.00e+00	1.64e+07	5.03e+07	0.00e+00	0.00e+00	0.00e+00	9.58e+07
Co-60	0.00e+00	6.93e+07	2.04e+08	0.00e+00	0.00e+00	0.00e+00	3.84e+08
Ni-59	2.18e+08	5.80e+07	3.69e+07	0.00e+00	0.00e+00	0.00e+00	3.85e+06
Ni-63	2.91e+09	1.56e+08	9.91e+07	0.00e+00	0.00e+00	0.00e+00	1.05e+07
Ni-65	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cu-64	0.00e+00	3.07e-07	1.85e-07	0.00e+00	7.41e-07	0.00e+00	1.44e-05
Zn-65	3.75e+08	1.00e+09	6.22e+08	0.00e+00	6.30e+08	0.00e+00	1.76e+08
Zn-69	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-69m	2.91e-05	4.95e-05	5.85e-06	0.00e+00	2.88e-05	0.00e+00	1.61e-03
Se-79	0.00e+00	1.29e+08	2.87e+07	0.00e+00	2.10e+08	0.00e+00	8.48e+06
Br-82	0.00e+00	0.00e+00	1.53e+03	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	5.77e+08	3.55e+08	0.00e+00	0.00e+00	0.00e+00	3.71e+07
Rb-87	0.00e+00	1.25e+09	5.80e+08	0.00e+00	0.00e+00	0.00e+00	1.88e+07
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	4.82e+08	0.00e+00	1.38e+07	0.00e+00	0.00e+00	0.00e+00	1.87e+07
Sr-90	1.57e+10	0.00e+00	3.15e+08	0.00e+00	0.00e+00	0.00e+00	1.40e+08
Sr-91	2.50e-10	0.00e+00	9.42e-12	0.00e+00	0.00e+00	0.00e+00	5.51e-10
Sr-92	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-90	1.72e+02	0.00e+00	4.61e+00	0.00e+00	0.00e+00	0.00e+00	4.91e+05
Y-91	1.80e+06	0.00e+00	4.82e+04	0.00e+00	0.00e+00	0.00e+00	2.40e+08
Y-91m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-92	2.69e-39	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	7.76e-35
Y-93	7.73e-12	0.00e+00	2.12e-13	0.00e+00	0.00e+00	0.00e+00	1.15e-07
Zr-93	5.80e+06	2.17e+05	1.55e+05	0.00e+00	8.41e+05	0.00e+00	8.24e+07
Zr-95	2.66e+06	5.86e+05	5.21e+05	0.00e+00	8.38e+05	0.00e+00	6.11e+08
Zr-97	3.28e-05	4.74e-06	2.80e-06	0.00e+00	6.80e-06	0.00e+00	7.18e-01
Nb-93m	2.99e+07	7.46e+06	2.45e+06	0.00e+00	8.05e+06	0.00e+00	1.12e+09
Nb-95	3.10e+06	1.21e+06	8.62e+05	0.00e+00	1.13e+06	0.00e+00	2.23e+09
Nb-97	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mo-93	0.00e+00	1.97e+08	7.07e+06	0.00e+00	5.19e+07	0.00e+00	9.98e+06
Mo-99	0.00e+00	1.16e+05	2.86e+04	0.00e+00	2.47e+05	0.00e+00	9.57e+04
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	2.19e+08	2.44e+08	8.75e+07	0.00e+00	2.87e+09	2.15e+07	2.56e+09
Tc-99m	6.61e-21	1.30e-20	2.15e-19	0.00e+00	1.88e-19	6.58e-21	7.37e-18
Ru-103	1.55e+08	0.00e+00	5.96e+07	0.00e+00	3.90e+08	0.00e+00	4.01e+09
Ru-105	9.83e-28	0.00e+00	3.57e-28	0.00e+00	8.64e-27	0.00e+00	6.42e-25
Ru-106	4.44e+09	0.00e+00	5.54e+08	0.00e+00	5.99e+09	0.00e+00	6.90e+10
Rh-105	6.01e+00	3.23e+00	2.76e+00	0.00e+00	1.29e+01	0.00e+00	2.00e+02
Pd-107	0.00e+00	1.93e+06	1.64e+05	0.00e+00	1.61e+07	0.00e+00	3.83e+06
Pd-109	0.00e+00	1.77e-06	5.32e-07	0.00e+00	9.51e-06	0.00e+00	1.05e-04

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	8.39e+06	5.67e+06	4.53e+06	0.00e+00	1.06e+07	0.00e+00	6.74e+08
Ag-111	2.33e+05	7.28e+04	4.81e+04	0.00e+00	2.20e+05	0.00e+00	4.46e+07
Cd-113m	0.00e+00	5.50e+06	2.34e+05	0.00e+00	5.66e+06	0.00e+00	1.42e+07
Cd-115m	0.00e+00	1.78e+06	7.58e+04	0.00e+00	1.32e+06	0.00e+00	2.42e+07
Sn-123	8.81e+09	1.09e+08	2.15e+08	1.16e+08	0.00e+00	0.00e+00	4.32e+09
Sn-125	2.80e+08	4.22e+06	1.25e+07	4.37e+06	0.00e+00	0.00e+00	8.67e+08
Sn-126	2.72e+10	3.39e+08	7.74e+08	9.32e+07	0.00e+00	0.00e+00	2.04e+09
Sb-124	2.92e+07	3.79e+05	1.02e+07	6.46e+04	0.00e+00	1.62e+07	1.83e+08
Sb-125	2.85e+07	2.20e+05	5.97e+06	2.64e+04	0.00e+00	1.59e+07	6.80e+07
Sb-126	2.80e+06	4.28e+04	1.01e+06	1.64e+04	0.00e+00	1.34e+06	5.64e+07
Sb-127	2.63e+04	4.06e+02	9.11e+03	2.92e+02	0.00e+00	1.14e+04	1.48e+06
Te-125m	5.69e+08	1.54e+08	7.59e+07	1.60e+08	0.00e+00	0.00e+00	5.49e+08
Te-127	3.53e-10	9.51e-11	7.57e-11	2.44e-10	1.00e-09	0.00e+00	1.38e-08
Te-127m	1.77e+09	4.78e+08	2.11e+08	4.24e+08	5.06e+09	0.00e+00	1.44e+09
Te-129	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-129m	1.79e+09	5.00e+08	2.78e+08	5.77e+08	5.26e+09	0.00e+00	2.18e+09
Te-131	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-131m	7.09e+02	2.45e+02	2.61e+02	5.04e+02	2.37e+03	0.00e+00	9.94e+03
Te-132	2.13e+06	9.43e+05	1.14e+06	1.37e+06	8.76e+06	0.00e+00	9.49e+06
Te-133m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-129	2.06e+08	1.26e+08	1.13e+08	8.27e+10	2.13e+08	0.00e+00	6.36e+06
I-130	3.13e-06	6.33e-06	3.26e-06	6.97e-04	9.46e-06	0.00e+00	2.96e-06
I-131	1.66e+07	1.67e+07	9.48e+06	5.51e+09	2.74e+07	0.00e+00	1.48e+06
I-132	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-133	5.78e-01	7.15e-01	2.70e-01	1.33e+02	1.19e+00	0.00e+00	2.88e-01
I-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-135	6.91e-17	1.24e-16	5.88e-17	1.10e-14	1.91e-16	0.00e+00	9.47e-17
Cs-134	9.22e+08	1.51e+09	3.19e+08	0.00e+00	4.69e+08	1.68e+08	8.16e+06
Cs-134m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	3.39e+08	2.36e+08	2.42e+07	0.00e+00	8.34e+07	2.78e+07	1.77e+06
Cs-136	1.62e+07	4.46e+07	2.89e+07	0.00e+00	2.38e+07	3.54e+06	1.57e+06
Cs-137	1.33e+09	1.28e+09	1.88e+08	0.00e+00	4.16e+08	1.50e+08	7.99e+06
Cs-138	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-140	4.39e+07	3.85e+04	2.56e+06	0.00e+00	1.25e+04	2.29e+04	2.22e+07
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	5.64e-02	1.97e-02	6.64e-03	0.00e+00	0.00e+00	0.00e+00	5.49e+02
La-141	5.50e-37	1.28e-37	2.78e-38	0.00e+00	0.00e+00	0.00e+00	2.85e-32
La-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-141	2.22e+04	1.11e+04	1.65e+03	0.00e+00	4.86e+03	0.00e+00	1.38e+07
Ce-143	3.21e-02	1.74e+01	2.52e-03	0.00e+00	7.29e-03	0.00e+00	2.55e+02
Ce-144	2.32e+06	7.26e+05	1.24e+05	0.00e+00	4.02e+05	0.00e+00	1.89e+08
Pr-143	3.34e+04	1.00e+04	1.66e+03	0.00e+00	5.43e+03	0.00e+00	3.61e+07
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	1.17e+04	9.48e+03	7.34e+02	0.00e+00	5.20e+03	0.00e+00	1.50e+07
Pm-147	1.52e+06	1.08e+05	5.81e+04	0.00e+00	1.91e+05	0.00e+00	4.38e+07
Pm-148	3.11e+03	3.74e+02	2.42e+02	0.00e+00	6.35e+02	0.00e+00	9.98e+06
Pm-148m	2.70e+05	5.37e+04	5.37e+04	0.00e+00	7.96e+04	0.00e+00	1.51e+08
Pm-149	8.19e+00	8.71e-01	4.72e-01	0.00e+00	1.54e+00	0.00e+00	5.94e+04
Pm-151	8.80e-03	1.07e-03	6.96e-04	0.00e+00	1.81e-03	0.00e+00	1.21e+02
Sm-151	1.31e+06	1.95e+05	6.13e+04	0.00e+00	2.01e+05	0.00e+00	2.82e+07
Sm-153	1.86e+00	1.16e+00	1.12e-01	0.00e+00	3.53e-01	0.00e+00	1.54e+04
Eu-152	3.00e+06	5.46e+05	6.49e+05	0.00e+00	2.31e+06	0.00e+00	8.97e+07
Eu-154	1.13e+07	1.02e+06	9.27e+05	0.00e+00	4.46e+06	0.00e+00	2.36e+08
Eu-155	2.27e+06	1.63e+05	1.28e+05	0.00e+00	6.11e+05	0.00e+00	4.09e+08
Eu-156	5.77e+04	3.09e+04	6.39e+03	0.00e+00	1.99e+04	0.00e+00	7.01e+07
Tb-160	5.16e+05	0.00e+00	6.40e+04	0.00e+00	1.54e+05	0.00e+00	1.14e+08

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
 Waterford Steam Electric Station
 Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	4.86e+06	1.02e+06	8.59e+05	0.00e+00	1.45e+06	0.00e+00	1.18e+08
W-181	4.80e+04	1.18e+04	1.62e+03	0.00e+00	0.00e+00	0.00e+00	4.30e+05
W-185	1.72e+06	4.30e+05	6.02e+04	0.00e+00	0.00e+00	0.00e+00	1.60e+07
W-187	3.49e-02	2.06e-02	9.27e-03	0.00e+00	0.00e+00	0.00e+00	2.90e+00
Pb-210	1.40e+10	3.60e+09	6.17e+08	0.00e+00	1.08e+10	0.00e+00	6.79e+05
Bi-210	4.34e+05	2.24e+06	2.49e+05	0.00e+00	2.53e+07	0.00e+00	1.14e+07
Po-210	1.53e+10	2.45e+10	3.70e+09	0.00e+00	7.61e+10	0.00e+00	6.60e+08
Ra-223	9.80e+10	1.13e+08	1.96e+10	0.00e+00	3.00e+09	0.00e+00	1.56e+09
Ra-224	1.12e+09	2.04e+06	2.25e+08	0.00e+00	5.40e+07	0.00e+00	6.17e+07
Ra-225	1.96e+11	1.75e+08	3.91e+10	0.00e+00	4.63e+09	0.00e+00	2.25e+09
Ra-226	2.00e+13	6.39e+08	1.64e+13	0.00e+00	1.70e+10	0.00e+00	1.18e+10
Ra-228	1.32e+13	3.43e+08	1.48e+13	0.00e+00	9.09e+09	0.00e+00	1.99e+09
Ac-225	1.20e+08	1.24e+08	8.05e+06	0.00e+00	1.32e+07	0.00e+00	2.75e+09
Ac-227	2.52e+11	4.05e+10	1.56e+10	0.00e+00	8.92e+09	0.00e+00	5.15e+09
Th-227	3.22e+06	4.38e+04	9.30e+04	0.00e+00	2.32e+05	0.00e+00	3.10e+07
Th-228	4.07e+08	5.21e+06	1.38e+07	0.00e+00	2.71e+07	0.00e+00	1.14e+08
Th-229	4.80e+09	1.21e+08	8.01e+07	0.00e+00	5.91e+08	0.00e+00	1.64e+07
Th-230	7.26e+08	3.64e+07	2.03e+07	0.00e+00	1.77e+08	0.00e+00	1.27e+07
Th-232	8.10e+08	3.11e+07	6.15e+05	0.00e+00	1.51e+08	0.00e+00	1.08e+07
Th-234	2.49e+04	1.10e+03	7.19e+02	0.00e+00	5.83e+03	0.00e+00	8.58e+06
Pa-231	5.78e+15	1.91e+14	2.30e+14	0.00e+00	1.05e+15	0.00e+00	6.03e+13
Pa-233	5.91e+09	9.20e+08	1.03e+09	0.00e+00	3.39e+09	0.00e+00	4.70e+12
U-232	6.11e+09	0.00e+00	4.37e+08	0.00e+00	4.65e+08	0.00e+00	2.42e+07
U-233	1.29e+09	0.00e+00	7.82e+07	0.00e+00	2.12e+08	0.00e+00	2.24e+07
U-234	1.24e+09	0.00e+00	7.68e+07	0.00e+00	2.08e+08	0.00e+00	2.20e+07
U-235	1.19e+09	0.00e+00	7.19e+07	0.00e+00	1.95e+08	0.00e+00	2.79e+07
U-236	1.19e+09	0.00e+00	7.37e+07	0.00e+00	1.99e+08	0.00e+00	2.06e+07
U-237	3.42e+03	0.00e+00	9.09e+02	0.00e+00	9.87e+03	0.00e+00	3.02e+05
U-238	1.14e+09	0.00e+00	6.74e+07	0.00e+00	1.82e+08	0.00e+00	1.97e+07
Np-237	4.56e+08	3.01e+07	2.00e+07	0.00e+00	1.24e+08	0.00e+00	1.67e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i

Ri factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	2.27e+00	4.59e-02	3.53e-02	0.00e+00	1.46e-01	0.00e+00	1.57e+03
Np-239	4.29e-01	3.08e-02	2.17e-02	0.00e+00	8.91e-02	0.00e+00	2.28e+03
Pu-238	1.70e+07	1.97e+06	4.52e+05	0.00e+00	1.64e+06	0.00e+00	1.07e+06
Pu-239	1.85e+07	1.97e+06	4.74e+05	0.00e+00	1.75e+06	0.00e+00	9.80e+05
Pu-240	1.83e+07	2.05e+06	4.74e+05	0.00e+00	1.75e+06	0.00e+00	9.99e+05
Pu-241	5.51e+05	2.25e+04	1.14e+04	0.00e+00	4.21e+04	0.00e+00	2.05e+04
Pu-242	1.70e+07	1.97e+06	4.56e+05	0.00e+00	1.67e+06	0.00e+00	9.60e+05
Pu-244	1.99e+07	2.26e+07	5.22e+05	0.00e+00	1.93e+06	0.00e+00	1.43e+06
Am-241	2.73e+08	2.35e+08	2.05e+07	0.00e+00	1.25e+08	0.00e+00	1.53e+07
Am-242m	2.86e+08	2.29e+08	2.12e+07	0.00e+00	1.29e+08	0.00e+00	1.96e+07
Am-243	2.74e+08	2.31e+08	2.01e+07	0.00e+00	1.24e+08	0.00e+00	1.83e+07
Cm-242	1.52e+07	1.21e+07	1.01e+06	0.00e+00	3.23e+06	0.00e+00	1.41e+07
Cm-243	2.61e+08	2.12e+08	1.68e+07	0.00e+00	6.28e+07	0.00e+00	1.64e+07
Cm-244	2.20e+08	1.78e+08	1.41e+07	0.00e+00	5.17e+07	0.00e+00	1.58e+07
Cm-245	3.41e+08	2.74e+08	2.15e+07	0.00e+00	8.40e+07	0.00e+00	1.48e+07
Cm-246	3.37e+08	2.74e+08	2.15e+07	0.00e+00	8.38e+07	0.00e+00	1.45e+07
Cm-247	3.29e+08	2.70e+08	2.11e+07	0.00e+00	8.26e+07	0.00e+00	1.91e+07
Cm-248	2.74e+09	2.23e+09	1.74e+08	0.00e+00	6.81e+08	0.00e+00	3.09e+08
Cf-252	2.08e+08	0.00e+00	5.03e+06	0.00e+00	0.00e+00	0.00e+00	5.87e+07

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i**

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Be-10	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
C-14	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Na-22	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Na-24	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
P-32	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ca-41	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sc-46	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cr-51	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mn-54	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mn-56	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Fe-55	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Fe-59	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Co-57	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Co-58	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Co-60	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ni-59	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ni-63	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ni-65	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cu-64	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-65	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-69	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-69m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Se-79	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-82	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i**

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-87	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-90	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-91	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-92	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-90	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-91	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-91m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-92	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-93	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zr-93	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zr-95	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zr-97	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nb-93m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nb-95	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nb-97	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mo-93	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mo-99	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ru-103	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ru-105	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ru-106	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rh-105	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pd-107	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pd-109	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i**

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ag-111	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cd-113m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cd-115m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sn-123	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sn-125	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sn-126	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-124	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-125	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-126	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-127	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-125m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-127	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-127m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-129	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-129m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-131	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-131m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-132	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-133m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-129	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-130	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-131	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-132	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-133	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-135	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-134m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i**

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-136	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-137	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-138	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-140	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-143	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pr-143	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-147	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-148	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-148m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-149	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-151	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sm-151	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sm-153	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-152	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-154	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-155	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-156	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tb-160	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i**

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
W-181	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
W-185	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
W-187	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pb-210	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Bi-210	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Po-210	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-223	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-224	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-225	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-226	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-228	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ac-225	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ac-227	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-227	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-228	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-229	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-230	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-232	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-234	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pa-231	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pa-233	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-232	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-233	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-234	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-235	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-236	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-237	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-238	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Np-237	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**MEAT PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES
OTHER THAN NOBLE GASES, R_i**

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Meat & Poultry Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Np-239	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-238	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-239	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-240	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-241	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-242	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-244	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Am-241	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Am-242m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Am-243	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-242	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-243	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-244	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-245	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-246	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-247	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-248	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cf-252	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

R_i factors for Adult age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.29e+03	1.29e+03	1.29e+03	1.29e+03	1.29e+03	1.29e+03
Be-10	2.55e+08	3.93e+07	6.36e+06	0.00e+00	2.97e+07	0.00e+00	2.15e+09
C-14	2.28e+08	4.55e+07	4.55e+07	4.55e+07	4.55e+07	4.55e+07	4.55e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	4.26e+00	0.00e+00	4.72e-01	0.00e+00	0.00e+00	0.00e+00	1.26e-01
Na-22	1.32e+09	1.32e+09	1.32e+09	1.32e+09	1.32e+09	1.32e+09	1.32e+09
Na-24	2.68e+05	2.68e+05	2.68e+05	2.68e+05	2.68e+05	2.68e+05	2.68e+05
P-32	1.40e+09	8.73e+07	5.42e+07	0.00e+00	0.00e+00	0.00e+00	1.58e+08
Ca-41	1.48e+10	0.00e+00	1.60e+09	0.00e+00	0.00e+00	0.00e+00	1.47e+07
Sc-46	2.51e+05	4.86e+05	1.41e+05	0.00e+00	4.54e+05	0.00e+00	2.37e+09
Cr-51	0.00e+00	0.00e+00	4.64e+04	2.77e+04	1.02e+04	6.16e+04	1.17e+07
Mn-54	0.00e+00	3.13e+08	5.97e+07	0.00e+00	9.31e+07	0.00e+00	9.58e+08
Mn-56	0.00e+00	1.53e+01	2.72e+00	0.00e+00	1.94e+01	0.00e+00	4.89e+02
Fe-55	2.10e+08	1.45e+08	3.38e+07	0.00e+00	0.00e+00	8.08e+07	8.31e+07
Fe-59	1.26e+08	2.96e+08	1.14e+08	0.00e+00	0.00e+00	8.28e+07	9.88e+08
Co-57	0.00e+00	1.17e+07	1.94e+07	0.00e+00	0.00e+00	0.00e+00	2.97e+08
Co-58	0.00e+00	3.07e+07	6.89e+07	0.00e+00	0.00e+00	0.00e+00	6.23e+08
Co-60	0.00e+00	1.67e+08	3.69e+08	0.00e+00	0.00e+00	0.00e+00	3.14e+09
Ni-59	7.82e+08	2.68e+08	1.31e+08	0.00e+00	0.00e+00	0.00e+00	5.53e+07
Ni-63	1.04e+10	7.21e+08	3.49e+08	0.00e+00	0.00e+00	0.00e+00	1.50e+08
Ni-65	5.96e+01	7.75e+00	3.54e+00	0.00e+00	0.00e+00	0.00e+00	1.97e+02
Cu-64	0.00e+00	9.15e+03	4.29e+03	0.00e+00	2.31e+04	0.00e+00	7.79e+05
Zn-65	3.17e+08	1.01e+09	4.56e+08	0.00e+00	6.75e+08	0.00e+00	6.36e+08
Zn-69	5.06e-06	9.67e-06	6.72e-07	0.00e+00	6.28e-06	0.00e+00	1.45e-06
Zn-69m	2.24e+04	5.38e+04	4.92e+03	0.00e+00	3.26e+04	0.00e+00	3.29e+06
Se-79	0.00e+00	2.11e+08	3.52e+07	0.00e+00	3.65e+08	0.00e+00	4.31e+07
Br-82	0.00e+00	0.00e+00	1.50e+06	0.00e+00	0.00e+00	0.00e+00	1.72e+06
Br-83	0.00e+00	0.00e+00	3.01e+00	0.00e+00	0.00e+00	0.00e+00	4.33e+00
Br-84	0.00e+00	0.00e+00	2.14e-11	0.00e+00	0.00e+00	0.00e+00	1.68e-16
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Adult age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	2.19e+08	1.02e+08	0.00e+00	0.00e+00	0.00e+00	4.32e+07
Rb-87	0.00e+00	9.86e+08	3.43e+08	0.00e+00	0.00e+00	0.00e+00	4.62e+07
Rb-88	0.00e+00	2.64e-22	1.40e-22	0.00e+00	0.00e+00	0.00e+00	3.65e-33
Rb-89	0.00e+00	2.88e-26	2.03e-26	0.00e+00	0.00e+00	0.00e+00	1.67e-39
Sr-89	9.96e+09	0.00e+00	2.86e+08	0.00e+00	0.00e+00	0.00e+00	1.60e+09
Sr-90	6.95e+11	0.00e+00	1.40e+10	0.00e+00	0.00e+00	0.00e+00	1.75e+10
Sr-91	3.02e+05	0.00e+00	1.22e+04	0.00e+00	0.00e+00	0.00e+00	1.44e+06
Sr-92	4.15e+02	0.00e+00	1.79e+01	0.00e+00	0.00e+00	0.00e+00	8.21e+03
Y-90	1.33e+04	0.00e+00	3.56e+02	0.00e+00	0.00e+00	0.00e+00	1.41e+08
Y-91	5.11e+06	0.00e+00	1.37e+05	0.00e+00	0.00e+00	0.00e+00	2.81e+09
Y-91m	4.76e-09	0.00e+00	1.84e-10	0.00e+00	0.00e+00	0.00e+00	1.40e-08
Y-92	8.96e-01	0.00e+00	2.62e-02	0.00e+00	0.00e+00	0.00e+00	1.57e+04
Y-93	1.68e+02	0.00e+00	4.65e+00	0.00e+00	0.00e+00	0.00e+00	5.34e+06
Zr-93	3.35e+06	1.88e+05	8.73e+04	0.00e+00	7.11e+05	0.00e+00	1.95e+08
Zr-95	1.17e+06	3.77e+05	2.55e+05	0.00e+00	5.91e+05	0.00e+00	1.19e+09
Zr-97	3.36e+02	6.78e+01	3.10e+01	0.00e+00	1.02e+02	0.00e+00	2.10e+07
Nb-93m	2.02e+06	6.60e+05	1.63e+05	0.00e+00	7.59e+05	0.00e+00	3.05e+08
Nb-95	1.42e+05	7.91e+04	4.25e+04	0.00e+00	7.82e+04	0.00e+00	4.80e+08
Nb-97	2.84e-06	7.19e-07	2.63e-07	0.00e+00	8.39e-07	0.00e+00	2.65e-03
Mo-93	0.00e+00	6.02e+08	1.63e+07	0.00e+00	1.71e+08	0.00e+00	9.78e+07
Mo-99	0.00e+00	6.14e+06	1.17e+06	0.00e+00	1.39e+07	0.00e+00	1.42e+07
Tc-101	5.93e-31	8.55e-31	8.39e-30	0.00e+00	1.54e-29	4.37e-31	0.00e+00
Tc-99	1.00e+07	1.49e+07	4.02e+06	0.00e+00	1.88e+08	1.27e+06	4.87e+08
Tc-99m	3.06e+00	8.66e+00	1.10e+02	0.00e+00	1.31e+02	4.24e+00	5.12e+03
Ru-103	4.77e+06	0.00e+00	2.05e+06	0.00e+00	1.82e+07	0.00e+00	5.57e+08
Ru-105	5.29e+01	0.00e+00	2.09e+01	0.00e+00	6.84e+02	0.00e+00	3.24e+04
Ru-106	1.93e+08	0.00e+00	2.44e+07	0.00e+00	3.72e+08	0.00e+00	1.25e+10
Rh-105	8.01e+04	5.86e+04	3.86e+04	0.00e+00	2.49e+05	0.00e+00	9.34e+06
Pd-107	0.00e+00	1.18e+07	7.53e+05	0.00e+00	1.06e+08	0.00e+00	7.30e+07
Pd-109	0.00e+00	2.23e+04	5.02e+03	0.00e+00	1.27e+05	0.00e+00	2.47e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	1.05e+07	9.74e+06	5.79e+06	0.00e+00	1.92e+07	0.00e+00	3.98e+09
Ag-111	2.11e+05	8.81e+04	4.39e+04	0.00e+00	2.84e+05	0.00e+00	1.62e+08
Cd-113m	0.00e+00	2.52e+08	8.10e+06	0.00e+00	2.78e+08	0.00e+00	2.03e+09
Cd-115m	0.00e+00	5.34e+07	1.70e+06	0.00e+00	4.24e+07	0.00e+00	2.25e+09
Sn-123	1.71e+09	2.84e+07	4.18e+07	2.41e+07	0.00e+00	0.00e+00	3.49e+09
Sn-125	3.84e+07	7.74e+05	1.74e+06	6.40e+05	0.00e+00	0.00e+00	4.79e+08
Sn-126	6.77e+09	1.34e+08	1.92e+08	3.94e+07	0.00e+00	0.00e+00	1.95e+09
Sb-124	1.04e+08	1.96e+06	4.11e+07	2.51e+05	0.00e+00	8.07e+07	2.94e+09
Sb-125	1.37e+08	1.53e+06	3.25e+07	1.39e+05	0.00e+00	1.05e+08	1.50e+09
Sb-126	7.07e+06	1.44e+05	2.55e+06	4.33e+04	0.00e+00	4.34e+06	5.78e+08
Sb-127	5.22e+05	1.14e+04	2.00e+05	6.28e+03	0.00e+00	3.10e+05	1.19e+08
Te-125m	9.65e+07	3.50e+07	1.29e+07	2.90e+07	3.93e+08	0.00e+00	3.85e+08
Te-127	5.61e+03	2.02e+03	1.21e+03	4.16e+03	2.29e+04	0.00e+00	4.43e+05
Te-127m	3.49e+08	1.25e+08	4.25e+07	8.92e+07	1.42e+09	0.00e+00	1.17e+09
Te-129	7.13e-04	2.68e-04	1.74e-04	5.48e-04	3.00e-03	0.00e+00	5.38e-04
Te-129m	2.51e+08	9.37e+07	3.98e+07	8.63e+07	1.05e+09	0.00e+00	1.26e+09
Te-131	1.25e-15	5.21e-16	3.94e-16	1.03e-15	5.47e-15	0.00e+00	1.77e-16
Te-131m	9.10e+05	4.45e+05	3.71e+05	7.05e+05	4.51e+06	0.00e+00	4.42e+07
Te-132	4.30e+06	2.78e+06	2.61e+06	3.07e+06	2.68e+07	0.00e+00	1.31e+08
Te-133m	2.12e-05	1.24e-05	1.19e-05	1.79e-05	1.22e-04	0.00e+00	4.24e-06
Te-134	3.19e-08	2.09e-08	1.28e-08	2.79e-08	2.02e-07	0.00e+00	3.54e-11
I-129	1.31e+09	1.13e+09	3.69e+09	2.90e+12	2.42e+09	0.00e+00	1.78e+08
I-130	3.90e+05	1.15e+06	4.54e+05	9.75e+07	1.79e+06	0.00e+00	9.90e+05
I-131	8.07e+07	1.15e+08	6.62e+07	3.78e+10	1.98e+08	0.00e+00	3.05e+07
I-132	5.57e+01	1.49e+02	5.21e+01	5.21e+03	2.37e+02	0.00e+00	2.80e+01
I-133	2.08e+06	3.61e+06	1.10e+06	5.31e+08	6.31e+06	0.00e+00	3.25e+06
I-134	8.84e-05	2.40e-04	8.59e-05	4.16e-03	3.82e-04	0.00e+00	2.09e-07
I-135	3.85e+04	1.01e+05	3.72e+04	6.65e+06	1.62e+05	0.00e+00	1.14e+05
Cs-134	4.67e+09	1.11e+10	9.08e+09	0.00e+00	3.59e+09	1.19e+09	1.94e+08
Cs-134m	6.57e+00	1.38e+01	7.06e+00	0.00e+00	7.49e+00	1.18e+00	4.87e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

R_i factors for Adult age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	1.56e+09	1.44e+09	6.40e+08	0.00e+00	5.46e+08	1.63e+08	3.37e+07
Cs-136	4.26e+07	1.68e+08	1.21e+08	0.00e+00	9.37e+07	1.28e+07	1.91e+07
Cs-137	6.36e+09	8.70e+09	5.70e+09	0.00e+00	2.95e+09	9.81e+08	1.68e+08
Cs-138	3.39e-11	6.70e-11	3.32e-11	0.00e+00	4.92e-11	4.86e-12	2.86e-16
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	2.70e-02	1.92e-05	7.91e-04	0.00e+00	1.80e-05	1.09e-05	4.79e-02
Ba-140	1.28e+08	1.61e+05	8.41e+06	0.00e+00	5.48e+04	9.23e+04	2.64e+08
Ba-141	8.94e-22	6.76e-25	3.02e-23	0.00e+00	6.28e-25	3.83e-25	4.21e-31
Ba-142	3.88e-39	0.00e+00	2.44e-40	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	1.97e+03	9.95e+02	2.63e+02	0.00e+00	0.00e+00	0.00e+00	7.30e+07
La-141	5.98e-01	1.85e-01	3.04e-02	0.00e+00	0.00e+00	0.00e+00	2.21e+04
La-142	1.92e-04	8.75e-05	2.18e-05	0.00e+00	0.00e+00	0.00e+00	6.39e-01
Ce-141	1.97e+05	1.33e+05	1.51e+04	0.00e+00	6.19e+04	0.00e+00	5.09e+08
Ce-143	9.95e+02	7.36e+05	8.14e+01	0.00e+00	3.24e+02	0.00e+00	2.75e+07
Ce-144	3.29e+07	1.38e+07	1.77e+06	0.00e+00	8.16e+06	0.00e+00	1.11e+10
Pr-143	6.26e+04	2.51e+04	3.10e+03	0.00e+00	1.45e+04	0.00e+00	2.74e+08
Pr-144	2.36e-26	9.81e-27	1.20e-27	0.00e+00	5.53e-27	0.00e+00	3.40e-33
Nd-147	3.33e+04	3.85e+04	2.30e+03	0.00e+00	2.25e+04	0.00e+00	1.85e+08
Pm-147	5.74e+06	5.39e+05	2.18e+05	0.00e+00	1.02e+06	0.00e+00	6.79e+08
Pm-148	1.96e+04	3.25e+03	1.64e+03	0.00e+00	6.14e+03	0.00e+00	2.55e+08
Pm-148m	8.29e+05	2.15e+05	1.64e+05	0.00e+00	3.24e+05	0.00e+00	1.82e+09
Pm-149	1.69e+03	2.39e+02	9.77e+01	0.00e+00	4.52e+02	0.00e+00	4.48e+07
Pm-151	3.36e+02	5.65e+01	2.85e+01	0.00e+00	1.01e+02	0.00e+00	1.55e+07
Sm-151	5.52e+06	9.52e+05	2.28e+05	0.00e+00	1.06e+06	0.00e+00	4.20e+08
Sm-153	8.20e+02	6.84e+02	5.00e+01	0.00e+00	2.21e+02	0.00e+00	2.44e+07
Eu-152	1.55e+07	3.52e+06	3.09e+06	0.00e+00	2.18e+07	0.00e+00	2.03e+09
Eu-154	4.92e+07	6.05e+06	4.31e+06	0.00e+00	2.90e+07	0.00e+00	4.39e+09
Eu-155	6.39e+06	9.07e+05	5.85e+05	0.00e+00	4.18e+06	0.00e+00	7.13e+08
Eu-156	1.08e+05	8.35e+04	1.35e+04	0.00e+00	5.58e+04	0.00e+00	5.72e+08
Tb-160	1.96e+06	0.00e+00	2.44e+05	0.00e+00	8.09e+05	0.00e+00	1.81e+09

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Adult age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	2.16e+07	6.75e+06	5.13e+06	0.00e+00	1.01e+07	0.00e+00	2.05e+09
W-181	5.33e+05	1.74e+05	1.86e+04	0.00e+00	0.00e+00	0.00e+00	1.98e+07
W-185	1.73e+07	5.77e+06	6.07e+05	0.00e+00	0.00e+00	0.00e+00	6.67e+08
W-187	3.79e+04	3.17e+04	1.11e+04	0.00e+00	0.00e+00	0.00e+00	1.04e+07
Pb-210	1.22e+12	3.48e+11	4.33e+10	0.00e+00	9.79e+11	0.00e+00	1.78e+08
Bi-210	1.18e+06	8.17e+06	6.78e+05	0.00e+00	9.83e+07	0.00e+00	1.22e+08
Po-210	2.01e+10	4.26e+10	4.85e+09	0.00e+00	1.42e+11	0.00e+00	3.59e+09
Ra-223	2.74e+10	4.23e+07	5.49e+09	0.00e+00	1.20e+09	0.00e+00	1.77e+09
Ra-224	3.08e+09	7.47e+06	6.19e+08	0.00e+00	2.11e+08	0.00e+00	6.51e+08
Ra-225	4.99e+10	5.92e+07	9.97e+09	0.00e+00	1.68e+09	0.00e+00	2.33e+09
Ra-226	2.42e+13	4.60e+08	1.76e+13	0.00e+00	1.31e+10	0.00e+00	2.66e+10
Ra-228	8.76e+12	2.44e+08	9.47e+12	0.00e+00	6.91e+09	0.00e+00	4.41e+09
Ac-225	2.11e+07	2.90e+07	1.42e+06	0.00e+00	3.31e+06	0.00e+00	1.95e+09
Ac-227	1.49e+11	1.97e+10	8.84e+09	0.00e+00	6.37e+09	0.00e+00	6.52e+09
Th-227	1.41e+08	2.55e+06	4.06e+06	0.00e+00	1.45e+07	0.00e+00	5.55e+09
Th-228	3.70e+10	6.27e+08	1.25e+09	0.00e+00	3.49e+09	0.00e+00	4.20e+10
Th-229	1.09e+12	3.12e+10	1.80e+10	0.00e+00	1.51e+11	0.00e+00	6.26e+09
Th-230	1.65e+11	9.38e+09	4.57e+09	0.00e+00	4.53e+10	0.00e+00	4.82e+09
Th-232	1.84e+11	8.01e+09	1.20e+08	0.00e+00	3.86e+10	0.00e+00	4.10e+09
Th-234	1.17e+06	6.89e+04	3.38e+04	0.00e+00	3.91e+05	0.00e+00	1.65e+09
Pa-231	3.29e+11	1.23e+10	1.27e+10	0.00e+00	6.92e+10	0.00e+00	5.75e+09
Pa-233	9.05e+04	1.82e+04	1.57e+04	0.00e+00	6.87e+04	0.00e+00	2.82e+08
U-232	3.30e+11	0.00e+00	2.36e+10	0.00e+00	3.58e+10	0.00e+00	5.42e+09
U-233	6.98e+10	0.00e+00	4.23e+09	0.00e+00	1.63e+10	0.00e+00	5.02e+09
U-234	6.70e+10	0.00e+00	4.14e+09	0.00e+00	1.59e+10	0.00e+00	4.92e+09
U-235	6.42e+10	0.00e+00	3.89e+09	0.00e+00	1.50e+10	0.00e+00	6.26e+09
U-236	6.42e+10	0.00e+00	3.97e+09	0.00e+00	1.53e+10	0.00e+00	4.62e+09
U-237	1.84e+05	0.00e+00	4.89e+04	0.00e+00	7.55e+05	0.00e+00	6.45e+07
U-238	6.15e+10	0.00e+00	3.64e+09	0.00e+00	1.40e+10	0.00e+00	4.41e+09
Np-237	1.01e+11	7.18e+09	4.44e+09	0.00e+00	3.30e+10	0.00e+00	6.36e+09

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

Ri factors for Adult age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	1.45e+04	3.91e+02	2.26e+02	0.00e+00	1.32e+03	0.00e+00	3.63e+07
Np-239	1.43e+03	1.40e+02	7.73e+01	0.00e+00	4.37e+02	0.00e+00	2.88e+07
Pu-238	5.04e+10	6.38e+09	1.37e+09	0.00e+00	5.86e+09	0.00e+00	5.84e+09
Pu-239	5.81e+10	6.98e+09	1.53e+09	0.00e+00	6.50e+09	0.00e+00	5.34e+09
Pu-240	5.80e+10	6.97e+09	1.53e+09	0.00e+00	6.49e+09	0.00e+00	5.43e+09
Pu-241	1.25e+09	5.92e+07	2.64e+07	0.00e+00	1.22e+08	0.00e+00	1.11e+08
Pu-242	5.39e+10	6.72e+09	1.47e+09	0.00e+00	6.26e+09	0.00e+00	5.23e+09
Pu-244	6.28e+10	7.70e+09	1.69e+09	0.00e+00	7.17e+09	0.00e+00	7.80e+09
Am-241	5.86e+10	5.47e+10	4.20e+09	0.00e+00	3.16e+10	0.00e+00	5.76e+09
Am-242m	6.09e+10	5.31e+10	4.35e+09	0.00e+00	3.24e+10	0.00e+00	7.48e+09
Am-243	6.04e+10	5.53e+10	4.25e+09	0.00e+00	3.20e+10	0.00e+00	6.97e+09
Cm-242	1.22e+09	1.30e+09	8.14e+07	0.00e+00	3.70e+08	0.00e+00	4.71e+09
Cm-243	4.78e+10	4.38e+10	2.99e+09	0.00e+00	1.40e+10	0.00e+00	6.23e+09
Cm-244	3.63e+10	3.40e+10	2.28e+09	0.00e+00	1.07e+10	0.00e+00	6.00e+09
Cm-245	7.52e+10	6.55e+10	4.62e+09	0.00e+00	2.16e+10	0.00e+00	5.64e+09
Cm-246	7.45e+10	6.54e+10	4.61e+09	0.00e+00	2.15e+10	0.00e+00	5.54e+09
Cm-247	7.27e+10	6.44e+10	4.54e+09	0.00e+00	2.12e+10	0.00e+00	7.28e+09
Cm-248	6.04e+11	5.31e+11	3.74e+10	0.00e+00	1.75e+11	0.00e+00	1.18e+11
Cf-252	1.98e+10	0.00e+00	4.77e+08	0.00e+00	0.00e+00	0.00e+00	2.18e+10

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.47e+03	1.47e+03	1.47e+03	1.47e+03	1.47e+03	1.47e+03
Be-10	4.07e+08	6.31e+07	1.03e+07	0.00e+00	4.82e+07	0.00e+00	2.58e+09
C-14	3.69e+08	7.38e+07	7.38e+07	7.38e+07	7.38e+07	7.38e+07	7.38e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	3.87e+00	0.00e+00	4.24e-01	0.00e+00	0.00e+00	0.00e+00	3.48e-01
Na-22	2.01e+09	2.01e+09	2.01e+09	2.01e+09	2.01e+09	2.01e+09	2.01e+09
Na-24	2.38e+05	2.38e+05	2.38e+05	2.38e+05	2.38e+05	2.38e+05	2.38e+05
P-32	1.61e+09	9.96e+07	6.23e+07	0.00e+00	0.00e+00	0.00e+00	1.35e+08
Ca-41	1.79e+10	0.00e+00	1.94e+09	0.00e+00	0.00e+00	0.00e+00	1.77e+07
Sc-46	3.61e+05	7.02e+05	2.08e+05	0.00e+00	6.72e+05	0.00e+00	2.39e+09
Cr-51	0.00e+00	0.00e+00	6.16e+04	3.42e+04	1.35e+04	8.80e+04	1.04e+07
Mn-54	0.00e+00	4.54e+08	9.01e+07	0.00e+00	1.36e+08	0.00e+00	9.32e+08
Mn-56	0.00e+00	1.38e+01	2.46e+00	0.00e+00	1.75e+01	0.00e+00	9.09e+02
Fe-55	3.26e+08	2.31e+08	5.39e+07	0.00e+00	0.00e+00	1.47e+08	1.00e+08
Fe-59	1.79e+08	4.18e+08	1.62e+08	0.00e+00	0.00e+00	1.32e+08	9.90e+08
Co-57	0.00e+00	1.79e+07	2.99e+07	0.00e+00	0.00e+00	0.00e+00	3.33e+08
Co-58	0.00e+00	4.36e+07	1.00e+08	0.00e+00	0.00e+00	0.00e+00	6.01e+08
Co-60	0.00e+00	2.49e+08	5.60e+08	0.00e+00	0.00e+00	0.00e+00	3.24e+09
Ni-59	1.20e+09	4.24e+08	2.04e+08	0.00e+00	0.00e+00	0.00e+00	6.64e+07
Ni-63	1.61e+10	1.13e+09	5.45e+08	0.00e+00	0.00e+00	0.00e+00	1.81e+08
Ni-65	5.55e+01	7.09e+00	3.23e+00	0.00e+00	0.00e+00	0.00e+00	3.85e+02
Cu-64	0.00e+00	8.29e+03	3.90e+03	0.00e+00	2.10e+04	0.00e+00	6.43e+05
Zn-65	4.24e+08	1.47e+09	6.86e+08	0.00e+00	9.42e+08	0.00e+00	6.23e+08
Zn-69	4.73e-06	9.02e-06	6.31e-07	0.00e+00	5.89e-06	0.00e+00	1.66e-05
Zn-69m	2.08e+04	4.90e+04	4.50e+03	0.00e+00	2.98e+04	0.00e+00	2.69e+06
Se-79	0.00e+00	3.39e+08	5.70e+07	0.00e+00	5.91e+08	0.00e+00	5.18e+07
Br-82	0.00e+00	0.00e+00	1.32e+06	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	2.82e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	1.95e-11	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

Ri factors for Teen age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	2.73e+08	1.28e+08	0.00e+00	0.00e+00	0.00e+00	4.05e+07
Rb-87	0.00e+00	1.59e+09	5.55e+08	0.00e+00	0.00e+00	0.00e+00	5.55e+07
Rb-88	0.00e+00	2.44e-22	1.30e-22	0.00e+00	0.00e+00	0.00e+00	2.09e-29
Rb-89	0.00e+00	2.59e-26	1.83e-26	0.00e+00	0.00e+00	0.00e+00	3.98e-35
Sr-89	1.51e+10	0.00e+00	4.33e+08	0.00e+00	0.00e+00	0.00e+00	1.80e+09
Sr-90	9.22e+11	0.00e+00	1.84e+10	0.00e+00	0.00e+00	0.00e+00	2.11e+10
Sr-91	2.82e+05	0.00e+00	1.12e+04	0.00e+00	0.00e+00	0.00e+00	1.28e+06
Sr-92	3.86e+02	0.00e+00	1.65e+01	0.00e+00	0.00e+00	0.00e+00	9.83e+03
Y-90	1.24e+04	0.00e+00	3.34e+02	0.00e+00	0.00e+00	0.00e+00	1.02e+08
Y-91	7.83e+06	0.00e+00	2.10e+05	0.00e+00	0.00e+00	0.00e+00	3.21e+09
Y-91m	4.43e-09	0.00e+00	1.69e-10	0.00e+00	0.00e+00	0.00e+00	2.09e-07
Y-92	8.42e-01	0.00e+00	2.43e-02	0.00e+00	0.00e+00	0.00e+00	2.31e+04
Y-93	1.58e+02	0.00e+00	4.33e+00	0.00e+00	0.00e+00	0.00e+00	4.82e+06
Zr-93	5.03e+06	2.48e+05	1.35e+05	0.00e+00	8.77e+05	0.00e+00	2.34e+08
Zr-95	1.72e+06	5.43e+05	3.73e+05	0.00e+00	7.98e+05	0.00e+00	1.25e+09
Zr-97	3.11e+02	6.15e+01	2.83e+01	0.00e+00	9.33e+01	0.00e+00	1.67e+07
Nb-93m	3.09e+06	1.02e+06	2.55e+05	0.00e+00	1.19e+06	0.00e+00	3.66e+08
Nb-95	1.92e+05	1.07e+05	5.87e+04	0.00e+00	1.03e+05	0.00e+00	4.56e+08
Nb-97	2.63e-06	6.54e-07	2.39e-07	0.00e+00	7.65e-07	0.00e+00	1.56e-02
Mo-93	0.00e+00	9.63e+08	2.64e+07	0.00e+00	2.76e+08	0.00e+00	1.17e+08
Mo-99	0.00e+00	5.64e+06	1.08e+06	0.00e+00	1.29e+07	0.00e+00	1.01e+07
Tc-101	5.52e-31	7.85e-31	7.71e-30	0.00e+00	1.42e-29	4.78e-31	1.34e-37
Tc-99	1.63e+07	2.39e+07	6.52e+06	0.00e+00	3.04e+08	2.47e+06	5.85e+08
Tc-99m	2.70e+00	7.54e+00	9.77e+01	0.00e+00	1.12e+02	4.18e+00	4.95e+03
Ru-103	6.82e+06	0.00e+00	2.91e+06	0.00e+00	2.40e+07	0.00e+00	5.69e+08
Ru-105	4.92e+01	0.00e+00	1.91e+01	0.00e+00	6.20e+02	0.00e+00	3.97e+04
Ru-106	3.09e+08	0.00e+00	3.90e+07	0.00e+00	5.97e+08	0.00e+00	1.48e+10
Rh-105	7.52e+04	5.43e+04	3.56e+04	0.00e+00	2.31e+05	0.00e+00	6.91e+06
Pd-107	0.00e+00	1.89e+07	1.22e+06	0.00e+00	1.71e+08	0.00e+00	8.78e+07
Pd-109	0.00e+00	2.07e+04	4.71e+03	0.00e+00	1.20e+05	0.00e+00	2.09e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

R_i factors for Teen age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	1.52e+07	1.43e+07	8.72e+06	0.00e+00	2.73e+07	0.00e+00	4.03e+09
Ag-111	2.01e+05	8.35e+04	4.20e+04	0.00e+00	2.72e+05	0.00e+00	1.17e+08
Cd-113m	0.00e+00	4.06e+08	1.30e+07	0.00e+00	4.49e+08	0.00e+00	2.44e+09
Cd-115m	0.00e+00	7.94e+07	2.56e+06	0.00e+00	6.35e+07	0.00e+00	2.51e+09
Sn-123	2.72e+09	4.46e+07	6.61e+07	3.57e+07	0.00e+00	0.00e+00	4.11e+09
Sn-125	3.84e+07	7.65e+05	1.73e+06	6.01e+05	0.00e+00	0.00e+00	3.62e+08
Sn-126	1.05e+10	1.96e+08	3.00e+08	5.17e+07	0.00e+00	0.00e+00	2.34e+09
Sb-124	1.54e+08	2.84e+06	6.02e+07	3.50e+05	0.00e+00	1.35e+08	3.11e+09
Sb-125	2.14e+08	2.34e+06	5.01e+07	2.05e+05	0.00e+00	1.88e+08	1.67e+09
Sb-126	7.45e+06	1.52e+05	2.68e+06	4.21e+04	0.00e+00	5.34e+06	4.41e+08
Sb-127	4.82e+05	1.03e+04	1.82e+05	5.42e+03	0.00e+00	3.28e+05	8.19e+07
Te-125m	1.48e+08	5.34e+07	1.98e+07	4.14e+07	0.00e+00	0.00e+00	4.37e+08
Te-127	5.29e+03	1.88e+03	1.14e+03	3.65e+03	2.14e+04	0.00e+00	4.09e+05
Te-127m	5.51e+08	1.96e+08	6.56e+07	1.31e+08	2.23e+09	0.00e+00	1.37e+09
Te-129	6.68e-04	2.49e-04	1.63e-04	4.77e-04	2.80e-03	0.00e+00	3.65e-03
Te-129m	3.61e+08	1.34e+08	5.72e+07	1.17e+08	1.51e+09	0.00e+00	1.36e+09
Te-131	1.16e-15	4.78e-16	3.62e-16	8.93e-16	5.07e-15	0.00e+00	9.52e-17
Te-131m	8.42e+05	4.04e+05	3.37e+05	6.07e+05	4.21e+06	0.00e+00	3.24e+07
Te-132	3.90e+06	2.47e+06	2.33e+06	2.61e+06	2.37e+07	0.00e+00	7.83e+07
Te-133m	1.94e-05	1.10e-05	1.07e-05	1.54e-05	1.09e-04	0.00e+00	4.45e-05
Te-134	2.89e-08	1.85e-08	1.94e-08	2.37e-08	1.77e-07	0.00e+00	1.07e-09
I-129	2.12e+09	1.78e+09	2.97e+09	2.17e+12	3.19e+09	0.00e+00	2.08e+08
I-130	3.49e+05	1.01e+06	4.03e+05	8.22e+07	1.55e+06	0.00e+00	7.75e+05
I-131	7.68e+07	1.08e+08	5.78e+07	3.14e+10	1.85e+08	0.00e+00	2.13e+07
I-132	5.02e+01	1.31e+02	4.72e+01	4.43e+03	2.07e+02	0.00e+00	5.72e+01
I-133	1.93e+06	3.27e+06	9.99e+05	4.57e+08	5.74e+06	0.00e+00	2.48e+06
I-134	7.99e-05	2.12e-04	7.61e-05	3.53e-03	3.34e-04	0.00e+00	2.79e-06
I-135	3.48e+04	8.96e+04	3.32e+04	5.76e+06	1.42e+05	0.00e+00	9.93e+04
Cs-134	7.10e+09	1.67e+10	7.75e+09	0.00e+00	5.31e+09	2.03e+09	2.08e+08
Cs-134m	5.95e+00	1.23e+01	6.33e+00	0.00e+00	6.86e+00	1.20e+00	8.20e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

Ri factors for Teen age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	2.53e+09	2.32e+09	5.42e+08	0.00e+00	8.84e+08	3.20e+08	4.05e+07
Cs-136	4.37e+07	1.72e+08	1.15e+08	0.00e+00	9.36e+07	1.48e+07	1.38e+07
Cs-137	1.01e+10	1.35e+10	4.69e+09	0.00e+00	4.59e+09	1.78e+09	1.92e+08
Cs-138	3.13e-11	6.01e-11	3.00e-11	0.00e+00	4.44e-11	5.16e-12	2.73e-14
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	2.54e-02	1.79e-05	7.40e-04	0.00e+00	1.69e-05	1.23e-05	2.27e-01
Ba-140	1.38e+08	1.69e+05	8.89e+06	0.00e+00	5.73e+04	1.14e+05	2.13e+08
Ba-141	8.36e-22	6.24e-25	2.79e-23	0.00e+00	5.79e-25	4.27e-25	1.78e-27
Ba-142	3.57e-39	0.00e+00	2.20e-40	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	1.80e+03	8.86e+02	2.36e+02	0.00e+00	0.00e+00	0.00e+00	5.09e+07
La-141	5.59e-01	1.72e-01	2.84e-02	0.00e+00	0.00e+00	0.00e+00	3.05e+04
La-142	1.77e-04	7.84e-05	1.95e-05	0.00e+00	0.00e+00	0.00e+00	2.39e+00
Ce-141	2.83e+05	1.89e+05	2.17e+04	0.00e+00	8.89e+04	0.00e+00	5.40e+08
Ce-143	9.30e+02	6.77e+05	7.56e+01	0.00e+00	3.04e+02	0.00e+00	2.04e+07
Ce-144	5.27e+07	2.18e+07	2.83e+06	0.00e+00	1.30e+07	0.00e+00	1.33e+10
Pr-143	7.00e+04	2.79e+04	3.48e+03	0.00e+00	1.62e+04	0.00e+00	2.30e+08
Pr-144	2.22e-26	9.07e-27	1.12e-27	0.00e+00	5.20e-27	0.00e+00	2.44e-29
Nd-147	3.62e+04	3.93e+04	2.36e+03	0.00e+00	2.31e+04	0.00e+00	1.42e+08
Pm-147	9.04e+06	8.57e+05	3.49e+05	0.00e+00	1.64e+06	0.00e+00	8.15e+08
Pm-148	1.83e+04	2.98e+03	1.50e+03	0.00e+00	5.39e+03	0.00e+00	1.78e+08
Pm-148m	1.17e+06	2.96e+05	2.31e+05	0.00e+00	4.48e+05	0.00e+00	1.86e+09
Pm-149	1.58e+03	2.23e+02	9.13e+01	0.00e+00	4.24e+02	0.00e+00	3.28e+07
Pm-151	3.13e+02	5.16e+01	2.61e+01	0.00e+00	9.28e+01	0.00e+00	1.16e+07
Sm-151	7.92e+06	1.52e+06	3.58e+05	0.00e+00	1.67e+06	0.00e+00	5.17e+08
Sm-153	7.66e+02	6.34e+02	4.67e+01	0.00e+00	2.07e+02	0.00e+00	1.79e+07
Eu-152	2.20e+07	5.30e+06	4.67e+06	0.00e+00	2.46e+07	0.00e+00	1.95e+09
Eu-154	7.18e+07	9.26e+06	6.53e+06	0.00e+00	4.14e+07	0.00e+00	4.89e+09
Eu-155	1.46e+07	1.41e+06	8.73e+05	0.00e+00	5.52e+06	0.00e+00	8.09e+09
Eu-156	1.24e+05	9.31e+04	1.52e+04	0.00e+00	6.26e+04	0.00e+00	4.76e+08
Tb-160	2.94e+06	0.00e+00	3.66e+05	0.00e+00	1.16e+06	0.00e+00	1.90e+09

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

Ri factors for Teen age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	3.24e+07	1.00e+07	7.23e+06	0.00e+00	1.46e+07	0.00e+00	2.46e+09
W-181	8.47e+05	2.73e+05	2.86e+04	0.00e+00	0.00e+00	0.00e+00	2.33e+07
W-185	2.70e+07	8.90e+06	9.41e+05	0.00e+00	0.00e+00	0.00e+00	7.69e+08
W-187	3.53e+04	2.87e+04	1.01e+04	0.00e+00	0.00e+00	0.00e+00	7.78e+06
Pb-210	1.63e+12	4.91e+11	6.33e+10	0.00e+00	1.55e+12	0.00e+00	2.14e+08
Bi-210	1.11e+06	7.61e+06	6.36e+05	0.00e+00	9.25e+07	0.00e+00	8.69e+07
Po-210	3.19e+10	6.71e+10	7.72e+09	0.00e+00	2.26e+11	0.00e+00	4.24e+09
Ra-223	2.90e+10	4.40e+07	5.78e+09	0.00e+00	1.26e+09	0.00e+00	1.40e+09
Ra-224	2.90e+09	6.94e+06	5.80e+08	0.00e+00	1.99e+08	0.00e+00	4.66e+08
Ra-225	5.79e+10	6.80e+07	1.16e+10	0.00e+00	1.95e+09	0.00e+00	2.02e+09
Ra-226	2.93e+13	7.39e+08	2.17e+13	0.00e+00	2.11e+10	0.00e+00	3.19e+10
Ra-228	1.21e+13	3.91e+08	1.34e+13	0.00e+00	1.12e+10	0.00e+00	5.30e+09
Ac-225	2.13e+07	2.91e+07	1.43e+06	0.00e+00	3.34e+06	0.00e+00	1.48e+09
Ac-227	1.85e+11	2.74e+10	1.10e+10	0.00e+00	7.95e+09	0.00e+00	7.84e+09
Th-227	1.77e+08	3.18e+06	5.11e+06	0.00e+00	1.82e+07	0.00e+00	5.20e+09
Th-228	5.74e+10	9.62e+08	1.94e+09	0.00e+00	5.41e+09	0.00e+00	5.04e+10
Th-229	1.30e+12	3.74e+10	2.15e+10	0.00e+00	1.81e+11	0.00e+00	7.53e+09
Th-230	1.96e+11	1.12e+10	5.45e+09	0.00e+00	5.44e+10	0.00e+00	5.80e+09
Th-232	2.20e+11	9.54e+09	1.48e+08	0.00e+00	4.64e+10	0.00e+00	4.93e+09
Th-234	1.59e+06	9.30e+04	4.61e+04	0.00e+00	5.30e+05	0.00e+00	1.68e+09
Pa-231	3.92e+11	1.47e+10	1.53e+10	0.00e+00	8.27e+10	0.00e+00	6.91e+09
Pa-233	1.24e+05	2.38e+04	2.12e+04	0.00e+00	8.96e+04	0.00e+00	2.71e+08
U-232	5.34e+11	0.00e+00	3.82e+10	0.00e+00	5.79e+10	0.00e+00	6.52e+09
U-233	1.13e+11	0.00e+00	6.85e+09	0.00e+00	2.64e+10	0.00e+00	6.04e+09
U-234	1.08e+11	0.00e+00	6.72e+09	0.00e+00	2.59e+10	0.00e+00	5.92e+09
U-235	1.04e+11	0.00e+00	6.31e+09	0.00e+00	2.43e+10	0.00e+00	7.53e+09
U-236	1.04e+11	0.00e+00	6.44e+09	0.00e+00	2.48e+10	0.00e+00	5.55e+09
U-237	1.74e+05	0.00e+00	4.64e+04	0.00e+00	7.16e+05	0.00e+00	4.62e+07
U-238	9.91e+10	0.00e+00	5.90e+09	0.00e+00	2.27e+10	0.00e+00	5.30e+09
Np-237	1.21e+11	8.68e+09	5.32e+09	0.00e+00	3.94e+10	0.00e+00	7.64e+09

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

R_i factors for Teen age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	1.36e+04	3.63e+02	2.11e+02	0.00e+00	1.24e+03	0.00e+00	2.66e+07
Np-239	1.38e+03	1.31e+02	7.25e+01	0.00e+00	4.10e+02	0.00e+00	2.10e+07
Pu-238	6.08e+10	7.79e+09	1.65e+09	0.00e+00	7.08e+09	0.00e+00	7.01e+09
Pu-239	6.95e+10	8.44e+09	1.83e+09	0.00e+00	7.79e+09	0.00e+00	6.42e+09
Pu-240	6.94e+10	8.42e+09	1.83e+09	0.00e+00	7.78e+09	0.00e+00	6.53e+09
Pu-241	1.58e+09	7.56e+07	3.32e+07	0.00e+00	1.54e+08	0.00e+00	1.33e+08
Pu-242	6.44e+10	8.13e+09	1.76e+09	0.00e+00	7.50e+09	0.00e+00	6.29e+09
Pu-244	7.53e+10	9.27e+09	2.02e+09	0.00e+00	8.59e+09	0.00e+00	9.36e+09
Am-241	7.02e+10	6.62e+10	5.06e+09	0.00e+00	3.79e+10	0.00e+00	6.92e+09
Am-242m	7.33e+10	6.46e+10	5.27e+09	0.00e+00	3.90e+10	0.00e+00	8.99e+09
Am-243	7.23e+10	6.68e+10	5.11e+09	0.00e+00	3.84e+10	0.00e+00	8.39e+09
Cm-242	1.95e+09	2.06e+09	1.29e+08	0.00e+00	5.90e+08	0.00e+00	5.57e+09
Cm-243	5.88e+10	5.45e+10	3.70e+09	0.00e+00	1.73e+10	0.00e+00	7.49e+09
Cm-244	4.54e+10	4.30e+10	2.88e+09	0.00e+00	1.34e+10	0.00e+00	7.21e+09
Cm-245	9.00e+10	7.92e+10	5.54e+09	0.00e+00	2.59e+10	0.00e+00	6.78e+09
Cm-246	8.92e+10	7.91e+10	5.53e+09	0.00e+00	2.58e+10	0.00e+00	6.66e+09
Cm-247	8.70e+10	7.79e+10	5.45e+09	0.00e+00	2.54e+10	0.00e+00	8.75e+09
Cm-248	7.23e+11	6.42e+11	4.50e+10	0.00e+00	2.10e+11	0.00e+00	1.41e+11
Cf-252	2.98e+10	0.00e+00	7.18e+08	0.00e+00	0.00e+00	0.00e+00	2.62e+10

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	2.29e+03	2.29e+03	2.29e+03	2.29e+03	2.29e+03	2.29e+03
Be-10	9.92e+08	1.15e+08	2.49e+07	0.00e+00	8.16e+07	0.00e+00	2.02e+09
C-14	8.89e+08	1.78e+08	1.78e+08	1.78e+08	1.78e+08	1.78e+08	1.78e+08
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	6.90e+00	0.00e+00	6.84e-01	0.00e+00	0.00e+00	0.00e+00	1.87e+00
Na-22	4.09e+09	4.09e+09	4.09e+09	4.09e+09	4.09e+09	4.09e+09	4.09e+09
Na-24	3.71e+05	3.71e+05	3.71e+05	3.71e+05	3.71e+05	3.71e+05	3.71e+05
P-32	3.37e+09	1.58e+08	1.30e+08	0.00e+00	0.00e+00	0.00e+00	9.30e+07
Ca-41	2.55e+10	0.00e+00	2.79e+09	0.00e+00	0.00e+00	0.00e+00	1.40e+07
Sc-46	7.85e+05	1.08e+06	4.14e+05	0.00e+00	9.52e+05	0.00e+00	1.57e+09
Cr-51	0.00e+00	0.00e+00	1.17e+05	6.50e+04	1.78e+04	1.19e+05	6.21e+06
Mn-54	0.00e+00	6.65e+08	1.77e+08	0.00e+00	1.86e+08	0.00e+00	5.58e+08
Mn-56	0.00e+00	1.81e+01	4.08e+00	0.00e+00	2.19e+01	0.00e+00	2.62e+03
Fe-55	8.01e+08	4.25e+08	1.32e+08	0.00e+00	0.00e+00	2.40e+08	7.87e+07
Fe-59	3.97e+08	6.43e+08	3.20e+08	0.00e+00	0.00e+00	1.86e+08	6.69e+08
Co-57	0.00e+00	2.98e+07	6.04e+07	0.00e+00	0.00e+00	0.00e+00	2.44e+08
Co-58	0.00e+00	6.44e+07	1.97e+08	0.00e+00	0.00e+00	0.00e+00	3.75e+08
Co-60	0.00e+00	3.78e+08	1.12e+09	0.00e+00	0.00e+00	0.00e+00	2.10e+09
Ni-59	2.95e+09	7.86e+08	5.01e+08	0.00e+00	0.00e+00	0.00e+00	5.22e+07
Ni-63	3.95e+10	2.11e+09	1.34e+09	0.00e+00	0.00e+00	0.00e+00	1.42e+08
Ni-65	1.02e+02	9.59e+00	5.60e+00	0.00e+00	0.00e+00	0.00e+00	1.17e+03
Cu-64	0.00e+00	1.09e+04	6.60e+03	0.00e+00	2.64e+04	0.00e+00	5.13e+05
Zn-65	8.12e+08	2.16e+09	1.35e+09	0.00e+00	1.36e+09	0.00e+00	3.80e+08
Zn-69	8.73e-06	1.26e-05	1.17e-06	0.00e+00	7.66e-06	0.00e+00	7.96e-04
Zn-69m	3.81e+04	6.49e+04	7.67e+03	0.00e+00	3.77e+04	0.00e+00	2.11e+06
Se-79	0.00e+00	6.20e+08	1.37e+08	0.00e+00	1.01e+09	0.00e+00	4.06e+07
Br-82	0.00e+00	0.00e+00	2.03e+06	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	5.20e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	3.30e-11	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	4.52e+08	2.78e+08	0.00e+00	0.00e+00	0.00e+00	2.90e+07
Rb-87	0.00e+00	2.90e+09	1.35e+09	0.00e+00	0.00e+00	0.00e+00	4.35e+07
Rb-88	0.00e+00	3.37e-22	2.34e-22	0.00e+00	0.00e+00	0.00e+00	1.65e-23
Rb-89	0.00e+00	3.42e-26	3.04e-26	0.00e+00	0.00e+00	0.00e+00	2.98e-28
Sr-89	3.59e+10	0.00e+00	1.03e+09	0.00e+00	0.00e+00	0.00e+00	1.39e+09
Sr-90	1.87e+12	0.00e+00	3.77e+10	0.00e+00	0.00e+00	0.00e+00	1.67e+10
Sr-91	5.20e+05	0.00e+00	1.96e+04	0.00e+00	0.00e+00	0.00e+00	1.15e+06
Sr-92	7.07e+02	0.00e+00	2.84e+01	0.00e+00	0.00e+00	0.00e+00	1.34e+04
Y-90	2.30e+04	0.00e+00	6.17e+02	0.00e+00	0.00e+00	0.00e+00	6.56e+07
Y-91	1.86e+07	0.00e+00	4.98e+05	0.00e+00	0.00e+00	0.00e+00	2.48e+09
Y-91m	8.12e-09	0.00e+00	2.95e-10	0.00e+00	0.00e+00	0.00e+00	1.59e-05
Y-92	1.55e+00	0.00e+00	4.43e-02	0.00e+00	0.00e+00	0.00e+00	4.48e+04
Y-93	2.91e+02	0.00e+00	7.98e+00	0.00e+00	0.00e+00	0.00e+00	4.34e+06
Zr-93	1.23e+07	4.59e+05	3.27e+05	0.00e+00	1.78e+06	0.00e+00	1.74e+08
Zr-95	3.86e+06	8.48e+05	7.54e+05	0.00e+00	1.21e+06	0.00e+00	8.84e+08
Zr-97	5.68e+02	8.20e+01	4.84e+01	0.00e+00	1.18e+02	0.00e+00	1.24e+07
Nb-93m	7.64e+06	1.91e+06	6.26e+05	0.00e+00	2.06e+06	0.00e+00	2.87e+08
Nb-95	4.10e+05	1.60e+05	1.14e+05	0.00e+00	1.50e+05	0.00e+00	2.95e+08
Nb-97	4.80e-06	8.68e-07	4.05e-07	0.00e+00	9.63e-07	0.00e+00	2.68e-01
Mo-93	0.00e+00	1.77e+09	6.36e+07	0.00e+00	4.67e+08	0.00e+00	8.97e+07
Mo-99	0.00e+00	7.70e+06	1.91e+06	0.00e+00	1.64e+07	0.00e+00	6.37e+06
Tc-101	1.02e-30	1.06e-30	1.35e-29	0.00e+00	1.81e-29	5.62e-31	3.38e-30
Tc-99	3.93e+07	4.38e+07	1.57e+07	0.00e+00	5.16e+08	3.87e+06	4.59e+08
Tc-99m	4.65e+00	9.12e+00	1.51e+02	0.00e+00	1.32e+02	4.63e+00	5.19e+03
Ru-103	1.53e+07	0.00e+00	5.89e+06	0.00e+00	3.86e+07	0.00e+00	3.96e+08
Ru-105	9.01e+01	0.00e+00	3.27e+01	0.00e+00	7.92e+02	0.00e+00	5.88e+04
Ru-106	7.45e+08	0.00e+00	9.30e+07	0.00e+00	1.01e+09	0.00e+00	1.16e+10
Rh-105	1.38e+05	7.43e+04	6.35e+04	0.00e+00	2.96e+05	0.00e+00	4.60e+06
Pd-107	0.00e+00	3.47e+07	2.95e+06	0.00e+00	2.90e+08	0.00e+00	6.89e+07
Pd-109	0.00e+00	2.90e+04	8.69e+03	0.00e+00	1.55e+05	0.00e+00	1.71e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	3.21e+07	2.17e+07	1.73e+07	0.00e+00	4.04e+07	0.00e+00	2.58e+09
Ag-111	3.78e+05	1.18e+05	7.81e+04	0.00e+00	3.57e+05	0.00e+00	7.25e+07
Cd-113m	0.00e+00	7.42e+08	3.16e+07	0.00e+00	7.64e+08	0.00e+00	1.91e+09
Cd-115m	0.00e+00	1.42e+08	6.04e+06	0.00e+00	1.05e+08	0.00e+00	1.93e+09
Sn-123	6.54e+09	8.11e+07	1.59e+08	8.60e+07	0.00e+00	0.00e+00	3.20e+09
Sn-125	7.43e+07	1.12e+06	3.33e+06	1.16e+06	0.00e+00	0.00e+00	2.30e+08
Sn-126	2.45e+10	3.05e+08	6.95e+08	8.38e+07	0.00e+00	0.00e+00	1.84e+09
Sb-124	3.52e+08	4.56e+06	1.23e+08	7.76e+05	0.00e+00	1.95e+08	2.20e+09
Sb-125	4.99e+08	3.85e+06	1.05e+08	4.62e+05	0.00e+00	2.78e+08	1.19e+09
Sb-126	1.40e+07	2.15e+05	5.04e+06	8.24e+04	0.00e+00	6.70e+06	2.83e+08
Sb-127	8.72e+05	1.35e+04	3.03e+05	9.71e+03	0.00e+00	3.78e+05	4.91e+07
Te-125m	3.50e+08	9.50e+07	4.67e+07	9.83e+07	0.00e+00	0.00e+00	3.38e+08
Te-127	9.76e+03	2.63e+03	2.09e+03	6.76e+03	2.78e+04	0.00e+00	3.81e+05
Te-127m	1.32e+09	3.56e+08	1.57e+08	3.16e+08	3.77e+09	0.00e+00	1.07e+09
Te-129	1.24e-03	3.45e-04	2.94e-04	8.82e-04	3.62e-03	0.00e+00	7.70e-02
Te-129m	8.40e+08	2.35e+08	1.30e+08	2.71e+08	2.47e+09	0.00e+00	1.03e+09
Te-131	2.14e-15	6.51e-16	6.35e-16	1.63e-15	6.46e-15	0.00e+00	1.12e-14
Te-131m	1.54e+06	5.32e+05	5.66e+05	1.09e+06	5.15e+06	0.00e+00	2.16e+07
Te-132	6.99e+06	3.10e+06	3.74e+06	4.51e+06	2.87e+07	0.00e+00	3.12e+07
Te-133m	3.48e-05	1.41e-05	1.74e-05	2.70e-05	1.34e-04	0.00e+00	1.07e-03
Te-134	5.16e-08	2.32e-08	3.10e-08	4.08e-08	2.15e-07	0.00e+00	2.36e-07
I-129	5.11e+09	3.13e+09	2.80e+09	2.05e+12	5.29e+09	0.00e+00	1.58e+08
I-130	6.12e+05	1.24e+06	6.37e+05	1.36e+08	1.85e+06	0.00e+00	5.78e+05
I-131	1.43e+08	1.44e+08	8.16e+07	4.75e+10	2.36e+08	0.00e+00	1.28e+07
I-132	8.91e+01	1.64e+02	7.53e+01	7.60e+03	2.51e+02	0.00e+00	1.93e+02
I-133	3.52e+06	4.35e+06	1.65e+06	8.08e+08	7.25e+06	0.00e+00	1.75e+06
I-134	1.42e-04	2.64e-04	1.21e-04	6.07e-03	4.03e-04	0.00e+00	1.75e-04
I-135	6.18e+04	1.11e+05	5.26e+04	9.86e+06	1.71e+05	0.00e+00	8.48e+04
Cs-134	1.60e+10	2.63e+10	5.55e+09	0.00e+00	8.15e+09	2.93e+09	1.42e+08
Cs-134m	1.06e+01	1.57e+01	1.02e+01	0.00e+00	8.26e+00	1.37e+00	1.98e+01

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	6.10e+09	4.25e+09	4.36e+08	0.00e+00	1.50e+09	5.01e+08	3.18e+07
Cs-136	8.23e+07	2.26e+08	1.46e+08	0.00e+00	1.21e+08	1.80e+07	7.95e+06
Cs-137	2.39e+10	2.29e+10	3.38e+09	0.00e+00	7.46e+09	2.68e+09	1.43e+08
Cs-138	5.69e-11	7.91e-11	5.02e-11	0.00e+00	5.57e-11	5.99e-12	3.64e-11
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	4.69e-02	2.50e-05	1.36e-03	0.00e+00	2.18e-05	1.47e-05	2.70e+00
Ba-140	2.76e+08	2.42e+05	1.61e+07	0.00e+00	7.88e+04	1.44e+05	1.40e+08
Ba-141	1.54e-21	8.64e-25	5.02e-23	0.00e+00	7.47e-25	5.07e-24	8.79e-22
Ba-142	6.46e-39	0.00e+00	3.61e-40	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	3.24e+03	1.13e+03	3.82e+02	0.00e+00	0.00e+00	0.00e+00	3.16e+07
La-141	1.04e+00	2.41e-01	5.24e-02	0.00e+00	0.00e+00	0.00e+00	5.37e+04
La-142	3.20e-04	1.02e-04	3.19e-05	0.00e+00	0.00e+00	0.00e+00	2.02e+01
Ce-141	6.55e+05	3.27e+05	4.85e+04	0.00e+00	1.43e+05	0.00e+00	4.08e+08
Ce-143	1.71e+03	9.29e+05	1.35e+02	0.00e+00	3.90e+02	0.00e+00	1.36e+07
Ce-144	1.27e+08	3.98e+07	6.78e+06	0.00e+00	2.21e+07	0.00e+00	1.04e+10
Pr-143	1.45e+05	4.37e+04	7.22e+03	0.00e+00	2.36e+04	0.00e+00	1.57e+08
Pr-144	4.11e-26	1.27e-26	2.07e-27	0.00e+00	6.73e-27	0.00e+00	2.74e-23
Nd-147	7.14e+04	5.78e+04	4.48e+03	0.00e+00	3.17e+04	0.00e+00	9.16e+07
Pm-147	2.21e+07	1.58e+06	8.48e+05	0.00e+00	2.79e+06	0.00e+00	6.39e+08
Pm-148	3.36e+04	4.04e+03	2.62e+03	0.00e+00	6.87e+03	0.00e+00	1.08e+08
Pm-148m	2.28e+06	4.54e+05	4.54e+05	0.00e+00	6.73e+05	0.00e+00	1.28e+09
Pm-149	2.93e+03	3.12e+02	1.69e+02	0.00e+00	5.52e+02	0.00e+00	2.13e+07
Pm-151	5.72e+02	6.96e+01	4.53e+01	0.00e+00	1.18e+02	0.00e+00	7.90e+06
Sm-151	1.88e+07	2.80e+06	8.81e+05	0.00e+00	2.89e+06	0.00e+00	4.06e+08
Sm-153	1.42e+03	8.83e+02	8.51e+01	0.00e+00	2.69e+02	0.00e+00	1.17e+07
Eu-152	4.47e+07	8.14e+06	9.66e+06	0.00e+00	3.44e+07	0.00e+00	1.34e+09
Eu-154	1.69e+08	1.52e+07	1.39e+07	0.00e+00	6.68e+07	0.00e+00	3.53e+09
Eu-155	3.27e+07	2.35e+06	1.84e+06	0.00e+00	8.82e+06	0.00e+00	5.89e+09
Eu-156	2.58e+05	1.38e+05	2.86e+04	0.00e+00	8.89e+04	0.00e+00	3.13e+08
Tb-160	6.01e+06	0.00e+00	7.46e+05	0.00e+00	1.79e+06	0.00e+00	1.33e+09

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	7.94e+07	1.66e+07	1.40e+07	0.00e+00	2.37e+07	0.00e+00	1.93e+09
W-181	2.03e+06	4.98e+05	6.85e+04	0.00e+00	0.00e+00	0.00e+00	1.81e+07
W-185	6.44e+07	1.61e+07	2.25e+06	0.00e+00	0.00e+00	0.00e+00	5.99e+08
W-187	6.41e+04	3.80e+04	1.70e+04	0.00e+00	0.00e+00	0.00e+00	5.34e+06
Pb-210	3.47e+12	8.90e+11	1.53e+11	0.00e+00	2.68e+12	0.00e+00	1.68e+08
Bi-210	2.06e+06	1.07e+07	1.18e+06	0.00e+00	1.20e+08	0.00e+00	5.41e+07
Po-210	7.66e+10	1.23e+11	1.85e+10	0.00e+00	3.81e+11	0.00e+00	3.30e+09
Ra-223	5.77e+10	6.67e+07	1.15e+10	0.00e+00	1.77e+09	0.00e+00	9.20e+08
Ra-224	5.36e+09	9.73e+06	1.07e+09	0.00e+00	2.58e+08	0.00e+00	2.94e+08
Ra-225	1.22e+11	1.09e+08	2.44e+10	0.00e+00	2.89e+09	0.00e+00	1.40e+09
Ra-226	4.23e+13	1.35e+09	3.47e+13	0.00e+00	3.59e+10	0.00e+00	2.51e+10
Ra-228	2.76e+13	7.16e+08	3.10e+13	0.00e+00	1.90e+10	0.00e+00	4.16e+09
Ac-225	4.16e+07	4.29e+07	2.79e+06	0.00e+00	4.58e+06	0.00e+00	9.54e+08
Ac-227	3.01e+11	4.84e+10	1.86e+10	0.00e+00	1.07e+10	0.00e+00	6.16e+09
Th-227	3.88e+08	5.28e+06	1.12e+07	0.00e+00	2.80e+07	0.00e+00	3.73e+09
Th-228	1.41e+11	1.81e+09	4.77e+09	0.00e+00	9.40e+09	0.00e+00	3.95e+10
Th-229	1.73e+12	4.34e+10	2.88e+10	0.00e+00	2.12e+11	0.00e+00	5.91e+09
Th-230	2.61e+11	1.31e+10	7.28e+09	0.00e+00	6.37e+10	0.00e+00	4.55e+09
Th-232	2.91e+11	1.12e+10	2.21e+08	0.00e+00	5.45e+10	0.00e+00	3.87e+09
Th-234	3.61e+06	1.59e+05	1.04e+05	0.00e+00	8.46e+05	0.00e+00	1.25e+09
Pa-231	5.20e+11	1.72e+10	2.07e+10	0.00e+00	9.41e+10	0.00e+00	5.42e+09
Pa-233	2.34e+05	3.65e+04	4.09e+04	0.00e+00	1.34e+05	0.00e+00	1.86e+08
U-232	1.29e+12	0.00e+00	9.24e+10	0.00e+00	9.83e+10	0.00e+00	5.12e+09
U-233	2.73e+11	0.00e+00	1.65e+10	0.00e+00	4.48e+10	0.00e+00	4.74e+09
U-234	2.62e+11	0.00e+00	1.62e+10	0.00e+00	4.40e+10	0.00e+00	4.65e+09
U-235	2.51e+11	0.00e+00	1.52e+10	0.00e+00	4.12e+10	0.00e+00	5.90e+09
U-236	2.51e+11	0.00e+00	1.56e+10	0.00e+00	4.21e+10	0.00e+00	4.35e+09
U-237	3.26e+05	0.00e+00	8.65e+04	0.00e+00	9.39e+05	0.00e+00	2.87e+07
U-238	2.40e+11	0.00e+00	1.43e+10	0.00e+00	3.85e+10	0.00e+00	4.16e+09
Np-237	1.64e+11	1.08e+10	7.20e+09	0.00e+00	4.45e+10	0.00e+00	6.00e+09

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	2.51e+04	5.08e+02	3.91e+02	0.00e+00	1.62e+03	0.00e+00	1.74e+07
Np-239	2.56e+03	1.84e+02	1.29e+02	0.00e+00	5.31e+02	0.00e+00	1.36e+07
Pu-238	8.73e+10	1.01e+10	2.32e+09	0.00e+00	8.44e+09	0.00e+00	5.50e+09
Pu-239	9.48e+10	1.01e+10	2.43e+09	0.00e+00	8.97e+09	0.00e+00	5.03e+09
Pu-240	9.41e+10	1.05e+10	2.43e+09	0.00e+00	8.97e+09	0.00e+00	5.13e+09
Pu-241	2.82e+09	1.15e+08	5.85e+07	0.00e+00	2.15e+08	0.00e+00	1.05e+08
Pu-242	8.75e+10	1.01e+10	2.34e+09	0.00e+00	8.60e+09	0.00e+00	4.93e+09
Pu-244	1.02e+11	1.16e+11	2.68e+09	0.00e+00	9.92e+09	0.00e+00	7.35e+09
Am-241	9.67e+10	8.32e+10	7.25e+09	0.00e+00	4.43e+10	0.00e+00	5.43e+09
Am-242m	1.03e+11	8.22e+10	7.64e+09	0.00e+00	4.63e+10	0.00e+00	7.06e+09
Am-243	9.85e+10	8.31e+10	7.23e+09	0.00e+00	4.45e+10	0.00e+00	6.58e+09
Cm-242	4.69e+09	3.74e+09	3.12e+08	0.00e+00	9.98e+08	0.00e+00	4.35e+09
Cm-243	9.36e+10	7.61e+10	6.03e+09	0.00e+00	2.25e+10	0.00e+00	5.87e+09
Cm-244	7.87e+10	6.37e+10	5.05e+09	0.00e+00	1.85e+10	0.00e+00	5.67e+09
Cm-245	1.23e+11	9.85e+10	7.72e+09	0.00e+00	3.02e+10	0.00e+00	5.32e+09
Cm-246	1.21e+11	9.85e+10	7.72e+09	0.00e+00	3.01e+10	0.00e+00	5.23e+09
Cm-247	1.18e+11	9.70e+10	7.57e+09	0.00e+00	2.97e+10	0.00e+00	6.87e+09
Cm-248	9.85e+11	8.01e+11	6.26e+10	0.00e+00	2.45e+11	0.00e+00	1.11e+11
Cf-252	7.28e+10	0.00e+00	1.76e+09	0.00e+00	0.00e+00	0.00e+00	2.05e+10

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Infant age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Be-10	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
C-14	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Na-22	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Na-24	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
P-32	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ca-41	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sc-46	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cr-51	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mn-54	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mn-56	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Fe-55	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Fe-59	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Co-57	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Co-58	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Co-60	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ni-59	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ni-63	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ni-65	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cu-64	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-65	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-69	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zn-69m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Se-79	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-82	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-87	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-90	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-91	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-92	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-90	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-91	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-91m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-92	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Y-93	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zr-93	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zr-95	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Zr-97	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nb-93m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nb-95	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nb-97	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mo-93	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Mo-99	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ru-103	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ru-105	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ru-106	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rh-105	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pd-107	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pd-109	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ag-111	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cd-113m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cd-115m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sn-123	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sn-125	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sn-126	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-124	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-125	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-126	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sb-127	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-125m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-127	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-127m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-129	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-129m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-131	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-131m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-132	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-133m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Te-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-129	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-130	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-131	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-132	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-133	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
I-135	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-134	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-134m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-136	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-137	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-138	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-140	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-143	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ce-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pr-143	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-147	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-148	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-148m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-149	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pm-151	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sm-151	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sm-153	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-152	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-154	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-155	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Eu-156	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tb-160	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
W-181	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
W-185	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
W-187	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pb-210	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Bi-210	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Po-210	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-223	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-224	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-225	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-226	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ra-228	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ac-225	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ac-227	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-227	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-228	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-229	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-230	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-232	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Th-234	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pa-231	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pa-233	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-232	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-233	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-234	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-235	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-236	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-237	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
U-238	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Np-237	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

LEAFY VEGETABLE PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.

Waterford Steam Electric Station

Pathway : Gaseous Release Leafy/Produce Vegetation Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Np-239	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-238	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-239	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-240	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-241	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-242	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Pu-244	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Am-241	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Am-242m	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Am-243	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-242	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-243	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-244	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-245	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-246	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-247	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cm-248	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cf-252	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**GOAT's MILK PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

Ri factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	8.88e+02	8.88e+02	8.88e+02	8.88e+02	8.88e+02	8.88e+02
Be-10	2.95e+05	4.55e+04	7.36e+03	0.00e+00	3.44e+04	0.00e+00	2.49e+06
C-14	2.63e+08	5.27e+07	5.27e+07	5.27e+07	5.27e+07	5.27e+07	5.27e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	5.58e-04	0.00e+00	6.19e-05	0.00e+00	0.00e+00	0.00e+00	1.65e-05
Na-22	6.35e+08	6.35e+08	6.35e+08	6.35e+08	6.35e+08	6.35e+08	6.35e+08
Na-24	2.93e+05	2.93e+05	2.93e+05	2.93e+05	2.93e+05	2.93e+05	2.93e+05
P-32	2.05e+10	1.28e+09	7.93e+08	0.00e+00	0.00e+00	0.00e+00	2.31e+09
Ca-41	1.37e+09	0.00e+00	1.48e+08	0.00e+00	0.00e+00	0.00e+00	1.37e+06
Sc-46	2.15e+01	4.18e+01	1.22e+01	0.00e+00	3.90e+01	0.00e+00	2.04e+05
Cr-51	0.00e+00	0.00e+00	3.43e+03	2.05e+03	7.55e+02	4.55e+03	8.62e+05
Mn-54	0.00e+00	1.01e+06	1.93e+05	0.00e+00	3.00e+05	0.00e+00	3.09e+06
Mn-56	0.00e+00	4.98e-04	8.84e-05	0.00e+00	6.33e-04	0.00e+00	1.59e-02
Fe-55	3.26e+05	2.26e+05	5.26e+04	0.00e+00	0.00e+00	1.26e+05	1.29e+05
Fe-59	3.86e+05	9.07e+05	3.48e+05	0.00e+00	0.00e+00	2.54e+05	3.02e+06
Co-57	0.00e+00	1.54e+05	2.55e+05	0.00e+00	0.00e+00	0.00e+00	3.89e+06
Co-58	0.00e+00	5.66e+05	1.27e+06	0.00e+00	0.00e+00	0.00e+00	1.15e+07
Co-60	0.00e+00	1.97e+06	4.34e+06	0.00e+00	0.00e+00	0.00e+00	3.70e+07
Ni-59	6.06e+07	2.08e+07	1.01e+07	0.00e+00	0.00e+00	0.00e+00	4.29e+06
Ni-63	8.07e+08	5.60e+07	2.71e+07	0.00e+00	0.00e+00	0.00e+00	1.17e+07
Ni-65	4.51e-02	5.86e-03	2.67e-03	0.00e+00	0.00e+00	0.00e+00	1.49e-01
Cu-64	0.00e+00	2.66e+03	1.25e+03	0.00e+00	6.72e+03	0.00e+00	2.27e+05
Zn-65	1.65e+08	5.24e+08	2.37e+08	0.00e+00	3.50e+08	0.00e+00	3.30e+08
Zn-69	2.62e-13	5.00e-13	3.48e-14	0.00e+00	3.25e-13	0.00e+00	7.52e-14
Zn-69m	2.18e+04	5.22e+04	4.78e+03	0.00e+00	3.16e+04	0.00e+00	3.19e+06
Se-79	0.00e+00	1.10e+08	1.83e+07	0.00e+00	1.90e+08	0.00e+00	2.25e+07
Br-82	0.00e+00	0.00e+00	3.88e+06	0.00e+00	0.00e+00	0.00e+00	4.44e+06
Br-83	0.00e+00	0.00e+00	1.18e-02	0.00e+00	0.00e+00	0.00e+00	1.71e-02
Br-84	0.00e+00	0.00e+00	2.08e-24	0.00e+00	0.00e+00	0.00e+00	1.63e-29
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	3.11e+08	1.45e+08	0.00e+00	0.00e+00	0.00e+00	6.14e+07
Rb-87	0.00e+00	3.42e+08	1.19e+08	0.00e+00	0.00e+00	0.00e+00	1.60e+07
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	3.05e+09	0.00e+00	8.74e+07	0.00e+00	0.00e+00	0.00e+00	4.89e+08
Sr-90	1.13e+11	0.00e+00	2.27e+09	0.00e+00	0.00e+00	0.00e+00	2.84e+09
Sr-91	6.10e+04	0.00e+00	2.46e+03	0.00e+00	0.00e+00	0.00e+00	2.90e+05
Sr-92	1.04e+00	0.00e+00	4.50e-02	0.00e+00	0.00e+00	0.00e+00	2.06e+01
Y-90	8.51e+00	0.00e+00	2.28e-01	0.00e+00	0.00e+00	0.00e+00	9.02e+04
Y-91	1.03e+03	0.00e+00	2.76e+01	0.00e+00	0.00e+00	0.00e+00	5.67e+05
Y-91m	7.52e-21	0.00e+00	2.91e-22	0.00e+00	0.00e+00	0.00e+00	2.21e-20
Y-92	6.77e-06	0.00e+00	1.98e-07	0.00e+00	0.00e+00	0.00e+00	1.19e-01
Y-93	2.69e-02	0.00e+00	7.43e-04	0.00e+00	0.00e+00	0.00e+00	8.53e+02
Zr-93	1.94e+02	1.09e+01	5.05e+00	0.00e+00	4.11e+01	0.00e+00	1.13e+04
Zr-95	1.13e+02	3.63e+01	2.46e+01	0.00e+00	5.70e+01	0.00e+00	1.15e+05
Zr-97	5.21e-02	1.05e-02	4.81e-03	0.00e+00	1.59e-02	0.00e+00	3.26e+03
Nb-93m	5.89e+04	1.92e+04	4.74e+03	0.00e+00	2.21e+04	0.00e+00	8.88e+06
Nb-95	9.91e+03	5.51e+03	2.96e+03	0.00e+00	5.45e+03	0.00e+00	3.34e+07
Nb-97	7.89e-13	2.00e-13	7.29e-14	0.00e+00	2.33e-13	0.00e+00	7.37e-10
Mo-93	0.00e+00	5.22e+07	1.41e+06	0.00e+00	1.48e+07	0.00e+00	8.49e+06
Mo-99	0.00e+00	2.97e+06	5.66e+05	0.00e+00	6.73e+06	0.00e+00	6.89e+06
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	2.90e+06	4.31e+06	1.16e+06	0.00e+00	5.43e+07	3.66e+05	1.41e+08
Tc-99m	4.01e-01	1.13e+00	1.44e+01	0.00e+00	1.72e+01	5.55e-01	6.71e+02
Ru-103	1.22e+02	0.00e+00	5.26e+01	0.00e+00	4.66e+02	0.00e+00	1.43e+04
Ru-105	1.04e-04	0.00e+00	4.09e-05	0.00e+00	1.34e-03	0.00e+00	6.34e-02
Ru-106	2.45e+03	0.00e+00	3.10e+02	0.00e+00	4.73e+03	0.00e+00	1.58e+05
Rh-105	4.15e+04	3.04e+04	2.00e+04	0.00e+00	1.29e+05	0.00e+00	4.84e+06
Pd-107	0.00e+00	1.36e+06	8.72e+04	0.00e+00	1.22e+07	0.00e+00	8.45e+06
Pd-109	0.00e+00	5.39e+03	1.22e+03	0.00e+00	3.08e+04	0.00e+00	5.97e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	6.99e+06	6.46e+06	3.84e+06	0.00e+00	1.27e+07	0.00e+00	2.64e+09
Ag-111	7.77e+05	3.25e+05	1.62e+05	0.00e+00	1.05e+06	0.00e+00	5.96e+08
Cd-113m	0.00e+00	3.53e+05	1.13e+04	0.00e+00	3.88e+05	0.00e+00	2.84e+06
Cd-115m	0.00e+00	1.51e+05	4.82e+03	0.00e+00	1.20e+05	0.00e+00	6.36e+06
Sn-123	6.43e+07	1.07e+06	1.57e+06	9.06e+05	0.00e+00	0.00e+00	1.31e+08
Sn-125	6.81e+06	1.37e+05	3.09e+05	1.14e+05	0.00e+00	0.00e+00	8.50e+07
Sn-126	1.96e+08	3.87e+06	5.56e+06	1.14e+06	0.00e+00	0.00e+00	5.63e+07
Sb-124	3.09e+06	5.83e+04	1.22e+06	7.49e+03	0.00e+00	2.40e+06	8.77e+07
Sb-125	2.45e+06	2.74e+04	5.84e+05	2.49e+03	0.00e+00	1.89e+06	2.70e+07
Sb-126	6.75e+05	1.37e+04	2.44e+05	4.13e+03	0.00e+00	4.14e+05	5.52e+07
Sb-127	5.44e+04	1.19e+03	2.09e+04	6.54e+02	0.00e+00	3.23e+04	1.24e+07
Te-125m	1.95e+06	7.08e+05	2.62e+05	5.88e+05	7.95e+06	0.00e+00	7.80e+06
Te-127	7.87e+01	2.82e+01	1.70e+01	5.83e+01	3.20e+02	0.00e+00	6.21e+03
Te-127m	5.49e+06	1.96e+06	6.69e+05	1.40e+06	2.23e+07	0.00e+00	1.84e+07
Te-129	3.50e-11	1.32e-11	8.53e-12	2.69e-11	1.47e-10	0.00e+00	2.64e-11
Te-129m	7.22e+06	2.69e+06	1.14e+06	2.48e+06	3.02e+07	0.00e+00	3.64e+07
Te-131	4.74e-34	1.98e-34	1.50e-34	3.90e-34	2.08e-33	0.00e+00	6.72e-35
Te-131m	4.34e+04	2.12e+04	1.77e+04	3.36e+04	2.15e+05	0.00e+00	2.11e+06
Te-132	2.88e+05	1.86e+05	1.75e+05	2.06e+05	1.80e+06	0.00e+00	8.82e+06
Te-133m	2.63e-14	1.54e-14	1.48e-14	2.23e-14	1.52e-13	0.00e+00	5.28e-15
Te-134	1.13e-19	7.39e-20	4.53e-20	9.86e-20	7.14e-19	0.00e+00	1.25e-22
I-129	9.10e+07	7.82e+07	2.56e+08	2.01e+11	1.68e+08	0.00e+00	1.24e+07
I-130	5.06e+04	1.49e+05	5.89e+04	1.26e+07	2.33e+05	0.00e+00	1.28e+05
I-131	3.55e+07	5.08e+07	2.91e+07	1.67e+10	8.71e+07	0.00e+00	1.34e+07
I-132	2.00e-02	5.36e-02	1.88e-02	1.88e+00	8.54e-02	0.00e+00	1.01e-02
I-133	4.65e+05	8.09e+05	2.47e+05	1.19e+08	1.41e+06	0.00e+00	7.27e+05
I-134	2.53e-13	6.87e-13	2.46e-13	1.19e-11	1.09e-12	0.00e+00	5.99e-16
I-135	1.55e+03	4.06e+03	1.50e+03	2.68e+05	6.51e+03	0.00e+00	4.58e+03
Cs-134	1.70e+10	4.03e+10	3.30e+10	0.00e+00	1.31e+10	4.33e+09	7.06e+08
Cs-134m	5.28e-01	1.11e+00	5.68e-01	0.00e+00	6.02e-01	9.49e-02	3.92e-01

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

**GOAT's MILK PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	5.43e+09	5.01e+09	2.22e+09	0.00e+00	1.89e+09	5.68e+08	1.17e+08
Cs-136	7.90e+08	3.12e+09	2.24e+09	0.00e+00	1.73e+09	2.38e+08	3.54e+08
Cs-137	2.21e+10	3.03e+10	1.98e+10	0.00e+00	1.03e+10	3.42e+09	5.86e+08
Cs-138	2.91e-23	5.76e-23	2.85e-23	0.00e+00	4.23e-23	4.18e-24	2.46e-28
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	5.45e-09	3.88e-12	1.60e-10	0.00e+00	3.63e-12	2.20e-12	9.67e-09
Ba-140	3.23e+06	4.05e+03	2.11e+05	0.00e+00	1.38e+03	2.32e+03	6.64e+06
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	5.42e-01	2.73e-01	7.22e-02	0.00e+00	0.00e+00	0.00e+00	2.00e+04
La-141	3.60e-06	1.12e-06	1.83e-07	0.00e+00	0.00e+00	0.00e+00	1.33e-01
La-142	2.28e-12	1.04e-12	2.59e-13	0.00e+00	0.00e+00	0.00e+00	7.58e-09
Ce-141	5.81e+02	3.93e+02	4.46e+01	0.00e+00	1.83e+02	0.00e+00	1.50e+06
Ce-143	4.99e+00	3.69e+03	4.09e-01	0.00e+00	1.63e+00	0.00e+00	1.38e+05
Ce-144	4.29e+04	1.79e+04	2.30e+03	0.00e+00	1.06e+04	0.00e+00	1.45e+07
Pr-143	1.89e+01	7.60e+00	9.39e-01	0.00e+00	4.39e+00	0.00e+00	8.30e+04
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	1.13e+01	1.31e+01	7.81e-01	0.00e+00	7.63e+00	0.00e+00	6.27e+04
Pm-147	3.44e+02	3.24e+01	1.31e+01	0.00e+00	6.11e+01	0.00e+00	4.08e+04
Pm-148	7.12e+00	1.18e+00	5.95e-01	0.00e+00	2.23e+00	0.00e+00	9.28e+04
Pm-148m	1.03e+02	2.66e+01	2.04e+01	0.00e+00	4.02e+01	0.00e+00	2.26e+05
Pm-149	5.13e-01	7.26e-02	2.96e-02	0.00e+00	1.37e-01	0.00e+00	1.36e+04
Pm-151	7.76e-02	1.30e-02	6.58e-03	0.00e+00	2.33e-02	0.00e+00	3.58e+03
Sm-151	3.20e+02	5.52e+01	1.32e+01	0.00e+00	6.16e+01	0.00e+00	2.43e+04
Sm-153	2.39e-01	1.99e-01	1.45e-02	0.00e+00	6.43e-02	0.00e+00	7.10e+03
Eu-152	9.01e+02	2.05e+02	1.80e+02	0.00e+00	1.27e+03	0.00e+00	1.18e+05
Eu-154	2.85e+03	3.50e+02	2.49e+02	0.00e+00	1.68e+03	0.00e+00	2.54e+05
Eu-155	3.90e+02	5.53e+01	3.57e+01	0.00e+00	2.55e+02	0.00e+00	4.35e+04
Eu-156	3.02e+01	2.34e+01	3.77e+00	0.00e+00	1.56e+01	0.00e+00	1.60e+05
Tb-160	1.79e+02	0.00e+00	2.23e+01	0.00e+00	7.39e+01	0.00e+00	1.65e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	1.25e+03	3.91e+02	2.97e+02	0.00e+00	5.84e+02	0.00e+00	1.19e+05
W-181	4.07e+03	1.33e+03	1.42e+02	0.00e+00	0.00e+00	0.00e+00	1.51e+05
W-185	1.55e+05	5.18e+04	5.45e+03	0.00e+00	0.00e+00	0.00e+00	5.99e+06
W-187	7.83e+02	6.54e+02	2.29e+02	0.00e+00	0.00e+00	0.00e+00	2.14e+05
Pb-210	8.78e+09	2.51e+09	3.12e+08	0.00e+00	7.06e+09	0.00e+00	1.29e+06
Bi-210	4.27e+04	2.95e+05	2.45e+04	0.00e+00	3.55e+06	0.00e+00	4.40e+06
Po-210	8.90e+07	1.89e+08	2.15e+07	0.00e+00	6.30e+08	0.00e+00	1.59e+07
Ra-223	1.47e+10	2.26e+07	2.93e+09	0.00e+00	6.40e+08	0.00e+00	9.46e+08
Ra-224	1.70e+09	4.11e+06	3.40e+08	0.00e+00	1.16e+08	0.00e+00	3.58e+08
Ra-225	2.28e+10	2.70e+07	4.55e+09	0.00e+00	7.67e+08	0.00e+00	1.06e+09
Ra-226	2.24e+12	4.26e+07	1.63e+12	0.00e+00	1.21e+09	0.00e+00	2.46e+09
Ra-228	8.25e+11	2.30e+07	8.91e+11	0.00e+00	6.50e+08	0.00e+00	4.15e+08
Ac-225	7.40e+03	1.02e+04	4.98e+02	0.00e+00	1.16e+03	0.00e+00	6.85e+05
Ac-227	8.65e+06	1.15e+06	5.14e+05	0.00e+00	3.70e+05	0.00e+00	3.79e+05
Th-227	3.36e+04	6.07e+02	9.67e+02	0.00e+00	3.45e+03	0.00e+00	1.32e+06
Th-228	2.25e+06	3.81e+04	7.62e+04	0.00e+00	2.12e+05	0.00e+00	2.55e+06
Th-229	6.31e+07	1.80e+06	1.04e+06	0.00e+00	8.72e+06	0.00e+00	3.62e+05
Th-230	9.55e+06	5.43e+05	2.64e+05	0.00e+00	2.62e+06	0.00e+00	2.79e+05
Th-232	1.07e+07	4.64e+05	6.96e+03	0.00e+00	2.24e+06	0.00e+00	2.37e+05
Th-234	2.22e+02	1.30e+01	6.40e+00	0.00e+00	7.39e+01	0.00e+00	3.13e+05
Pa-231	1.90e+07	7.14e+05	7.37e+05	0.00e+00	4.01e+06	0.00e+00	3.32e+05
Pa-233	1.53e+01	3.09e+00	2.66e+00	0.00e+00	1.16e+01	0.00e+00	4.78e+04
U-232	1.91e+09	0.00e+00	1.37e+08	0.00e+00	2.07e+08	0.00e+00	3.14e+07
U-233	4.04e+08	0.00e+00	2.45e+07	0.00e+00	9.41e+07	0.00e+00	2.91e+07
U-234	3.88e+08	0.00e+00	2.40e+07	0.00e+00	9.23e+07	0.00e+00	2.85e+07
U-235	3.71e+08	0.00e+00	2.25e+07	0.00e+00	8.67e+07	0.00e+00	3.62e+07
U-236	3.71e+08	0.00e+00	2.30e+07	0.00e+00	8.86e+07	0.00e+00	2.67e+07
U-237	6.78e+03	0.00e+00	1.81e+03	0.00e+00	2.79e+04	0.00e+00	2.38e+06
U-238	3.56e+08	0.00e+00	2.11e+07	0.00e+00	8.11e+07	0.00e+00	2.55e+07
Np-237	5.84e+06	4.15e+05	2.57e+05	0.00e+00	1.91e+06	0.00e+00	3.68e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Adult age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	4.34e+00	1.17e-01	6.75e-02	0.00e+00	3.96e-01	0.00e+00	1.09e+04
Np-239	4.41e-01	4.34e-02	2.39e-02	0.00e+00	1.35e-01	0.00e+00	8.89e+03
Pu-238	1.17e+06	1.48e+05	3.17e+04	0.00e+00	1.36e+05	0.00e+00	1.35e+05
Pu-239	1.34e+06	1.62e+05	3.54e+04	0.00e+00	1.50e+05	0.00e+00	1.24e+05
Pu-240	1.34e+06	1.61e+05	3.54e+04	0.00e+00	1.50e+05	0.00e+00	1.26e+05
Pu-241	2.90e+04	1.38e+03	6.14e+02	0.00e+00	2.83e+03	0.00e+00	2.59e+03
Pu-242	1.25e+06	1.56e+05	3.41e+04	0.00e+00	1.45e+05	0.00e+00	1.21e+05
Pu-244	1.45e+06	1.78e+05	3.91e+04	0.00e+00	1.66e+05	0.00e+00	1.80e+05
Am-241	3.47e+06	3.24e+06	2.48e+05	0.00e+00	1.87e+06	0.00e+00	3.41e+05
Am-242m	3.53e+06	3.07e+06	2.52e+05	0.00e+00	1.88e+06	0.00e+00	4.33e+05
Am-243	3.50e+06	3.20e+06	2.46e+05	0.00e+00	1.85e+06	0.00e+00	4.03e+05
Cm-242	8.72e+04	9.27e+04	5.80e+03	0.00e+00	2.63e+04	0.00e+00	3.35e+05
Cm-243	2.77e+06	2.54e+06	1.74e+05	0.00e+00	8.10e+05	0.00e+00	3.62e+05
Cm-244	2.11e+06	1.98e+06	1.33e+05	0.00e+00	6.20e+05	0.00e+00	3.49e+05
Cm-245	4.35e+06	3.79e+06	2.67e+05	0.00e+00	1.25e+06	0.00e+00	3.26e+05
Cm-246	4.31e+06	3.78e+06	2.67e+05	0.00e+00	1.24e+06	0.00e+00	3.20e+05
Cm-247	4.21e+06	3.73e+06	2.63e+05	0.00e+00	1.22e+06	0.00e+00	4.21e+05
Cm-248	3.50e+07	3.07e+07	2.17e+06	0.00e+00	1.01e+07	0.00e+00	6.82e+06
Cf-252	1.19e+06	0.00e+00	2.87e+04	0.00e+00	0.00e+00	0.00e+00	1.31e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.16e+03	1.16e+03	1.16e+03	1.16e+03	1.16e+03	1.16e+03
Be-10	5.36e+05	8.30e+04	1.35e+04	0.00e+00	6.34e+04	0.00e+00	3.40e+06
C-14	4.86e+08	9.72e+07	9.72e+07	9.72e+07	9.72e+07	9.72e+07	9.72e+07
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	9.97e-04	0.00e+00	1.09e-04	0.00e+00	0.00e+00	0.00e+00	8.97e-05
Na-22	1.10e+09	1.10e+09	1.10e+09	1.10e+09	1.10e+09	1.10e+09	1.10e+09
Na-24	5.12e+05	5.12e+05	5.12e+05	5.12e+05	5.12e+05	5.12e+05	5.12e+05
P-32	3.79e+10	2.35e+09	1.47e+09	0.00e+00	0.00e+00	0.00e+00	3.18e+09
Ca-41	1.89e+09	0.00e+00	2.04e+08	0.00e+00	0.00e+00	0.00e+00	1.87e+06
Sc-46	3.65e+01	7.11e+01	2.11e+01	0.00e+00	6.81e+01	0.00e+00	2.42e+05
Cr-51	0.00e+00	0.00e+00	5.99e+03	3.33e+03	1.31e+03	8.55e+03	1.01e+06
Mn-54	0.00e+00	1.68e+06	3.34e+05	0.00e+00	5.02e+05	0.00e+00	3.45e+06
Mn-56	0.00e+00	8.83e-04	1.57e-04	0.00e+00	1.12e-03	0.00e+00	5.81e-02
Fe-55	5.79e+05	4.10e+05	9.57e+04	0.00e+00	0.00e+00	2.60e+05	1.78e+05
Fe-59	6.74e+05	1.57e+06	6.07e+05	0.00e+00	0.00e+00	4.96e+05	3.72e+06
Co-57	0.00e+00	2.69e+05	4.52e+05	0.00e+00	0.00e+00	0.00e+00	5.03e+06
Co-58	0.00e+00	9.52e+05	2.19e+06	0.00e+00	0.00e+00	0.00e+00	1.31e+07
Co-60	0.00e+00	3.34e+06	7.51e+06	0.00e+00	0.00e+00	0.00e+00	4.34e+07
Ni-59	1.06e+08	3.74e+07	1.80e+07	0.00e+00	0.00e+00	0.00e+00	5.86e+06
Ni-63	1.42e+09	1.00e+08	4.81e+07	0.00e+00	0.00e+00	0.00e+00	1.59e+07
Ni-65	8.25e-02	1.05e-02	4.80e-03	0.00e+00	0.00e+00	0.00e+00	5.72e-01
Cu-64	0.00e+00	4.75e+03	2.23e+03	0.00e+00	1.20e+04	0.00e+00	3.68e+05
Zn-65	2.53e+08	8.78e+08	4.09e+08	0.00e+00	5.62e+08	0.00e+00	3.72e+08
Zn-69	4.82e-13	9.18e-13	6.42e-14	0.00e+00	6.00e-13	0.00e+00	1.69e-12
Zn-69m	3.96e+04	9.35e+04	8.57e+03	0.00e+00	5.68e+04	0.00e+00	5.14e+06
Se-79	0.00e+00	2.01e+08	3.38e+07	0.00e+00	3.50e+08	0.00e+00	3.07e+07
Br-82	0.00e+00	0.00e+00	6.73e+06	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	2.18e-02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	3.71e-24	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	5.67e+08	2.67e+08	0.00e+00	0.00e+00	0.00e+00	8.40e+07
Rb-87	0.00e+00	6.28e+08	2.19e+08	0.00e+00	0.00e+00	0.00e+00	2.19e+07
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	5.62e+09	0.00e+00	1.61e+08	0.00e+00	0.00e+00	0.00e+00	6.69e+08
Sr-90	1.71e+11	0.00e+00	3.41e+09	0.00e+00	0.00e+00	0.00e+00	3.90e+09
Sr-91	1.12e+05	0.00e+00	4.46e+03	0.00e+00	0.00e+00	0.00e+00	5.08e+05
Sr-92	1.90e+00	0.00e+00	8.11e-02	0.00e+00	0.00e+00	0.00e+00	4.85e+01
Y-90	1.56e+01	0.00e+00	4.21e-01	0.00e+00	0.00e+00	0.00e+00	1.29e+05
Y-91	1.90e+03	0.00e+00	5.08e+01	0.00e+00	0.00e+00	0.00e+00	7.77e+05
Y-91m	1.38e-20	0.00e+00	5.26e-22	0.00e+00	0.00e+00	0.00e+00	6.50e-19
Y-92	1.25e-05	0.00e+00	3.62e-07	0.00e+00	0.00e+00	0.00e+00	3.43e-01
Y-93	4.96e-02	0.00e+00	1.36e-03	0.00e+00	0.00e+00	0.00e+00	1.52e+03
Zr-93	3.31e+02	1.63e+01	8.91e+00	0.00e+00	5.77e+01	0.00e+00	1.54e+04
Zr-95	1.98e+02	6.25e+01	4.30e+01	0.00e+00	9.18e+01	0.00e+00	1.44e+05
Zr-97	9.48e-02	1.88e-02	8.64e-03	0.00e+00	2.84e-02	0.00e+00	5.08e+03
Nb-93m	1.03e+05	3.37e+04	8.44e+03	0.00e+00	3.94e+04	0.00e+00	1.21e+07
Nb-95	1.69e+04	9.37e+03	5.16e+03	0.00e+00	9.08e+03	0.00e+00	4.01e+07
Nb-97	1.44e-12	3.57e-13	1.30e-13	0.00e+00	4.18e-13	0.00e+00	8.53e-09
Mo-93	0.00e+00	9.51e+07	2.60e+06	0.00e+00	2.73e+07	0.00e+00	1.16e+07
Mo-99	0.00e+00	5.37e+06	1.02e+06	0.00e+00	1.23e+07	0.00e+00	9.62e+06
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	5.35e+06	7.87e+06	2.14e+06	0.00e+00	9.99e+07	8.14e+05	1.93e+08
Tc-99m	6.96e-01	1.94e+00	2.51e+01	0.00e+00	2.89e+01	1.08e+00	1.27e+03
Ru-103	2.17e+02	0.00e+00	9.29e+01	0.00e+00	7.66e+02	0.00e+00	1.81e+04
Ru-105	1.89e-04	0.00e+00	7.35e-05	0.00e+00	2.39e-03	0.00e+00	1.53e-01
Ru-106	4.50e+03	0.00e+00	5.67e+02	0.00e+00	8.68e+03	0.00e+00	2.16e+05
Rh-105	7.66e+04	5.54e+04	3.63e+04	0.00e+00	2.35e+05	0.00e+00	7.04e+06
Pd-107	0.00e+00	2.49e+06	1.60e+05	0.00e+00	2.25e+07	0.00e+00	1.16e+07
Pd-109	0.00e+00	9.87e+03	2.24e+03	0.00e+00	5.70e+04	0.00e+00	9.95e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	1.16e+07	1.09e+07	6.65e+06	0.00e+00	2.08e+07	0.00e+00	3.07e+09
Ag-111	1.43e+06	5.93e+05	2.98e+05	0.00e+00	1.93e+06	0.00e+00	8.28e+08
Cd-113m	0.00e+00	6.46e+05	2.08e+04	0.00e+00	7.14e+05	0.00e+00	3.88e+06
Cd-115m	0.00e+00	2.75e+05	8.89e+03	0.00e+00	2.20e+05	0.00e+00	8.72e+06
Sn-123	1.19e+08	1.95e+06	2.88e+06	1.56e+06	0.00e+00	0.00e+00	1.79e+08
Sn-125	1.26e+07	2.50e+05	5.66e+05	1.96e+05	0.00e+00	0.00e+00	1.18e+08
Sn-126	3.47e+08	6.46e+06	9.87e+06	1.70e+06	0.00e+00	0.00e+00	7.72e+07
Sb-124	5.51e+06	1.01e+05	2.15e+06	1.25e+04	0.00e+00	4.81e+06	1.11e+08
Sb-125	4.38e+06	4.79e+04	1.03e+06	4.19e+03	0.00e+00	3.85e+06	3.41e+07
Sb-126	1.20e+06	2.46e+04	4.33e+05	6.81e+03	0.00e+00	8.64e+05	7.13e+07
Sb-127	9.88e+04	2.11e+03	3.73e+04	1.11e+03	0.00e+00	6.72e+04	1.68e+07
Te-125m	3.60e+06	1.30e+06	4.82e+05	1.01e+06	0.00e+00	0.00e+00	1.06e+07
Te-127	1.46e+02	5.17e+01	3.14e+01	1.01e+02	5.91e+02	0.00e+00	1.13e+04
Te-127m	1.01e+07	3.59e+06	1.20e+06	2.41e+06	4.10e+07	0.00e+00	2.52e+07
Te-129	6.45e-11	2.40e-11	1.57e-11	4.61e-11	2.71e-10	0.00e+00	3.53e-10
Te-129m	1.32e+07	4.90e+06	2.09e+06	4.26e+06	5.53e+07	0.00e+00	4.96e+07
Te-131	8.67e-34	3.57e-34	2.71e-34	6.68e-34	3.79e-33	0.00e+00	7.11e-35
Te-131m	7.89e+04	3.79e+04	3.16e+04	5.69e+04	3.95e+05	0.00e+00	3.04e+06
Te-132	5.15e+05	3.26e+05	3.07e+05	3.44e+05	3.13e+06	0.00e+00	1.03e+07
Te-133m	4.74e-14	2.69e-14	2.62e-14	3.76e-14	2.66e-13	0.00e+00	1.09e-13
Te-134	2.01e-19	1.29e-19	1.35e-19	1.65e-19	1.23e-18	0.00e+00	7.47e-21
I-129	1.67e+08	1.41e+08	2.35e+08	1.71e+11	2.52e+08	0.00e+00	1.64e+07
I-130	8.89e+04	2.57e+05	1.03e+05	2.10e+07	3.96e+05	0.00e+00	1.98e+05
I-131	6.45e+07	9.03e+07	4.85e+07	2.63e+10	1.55e+08	0.00e+00	1.79e+07
I-132	3.55e-02	9.30e-02	3.34e-02	3.13e+00	1.47e-01	0.00e+00	4.05e-02
I-133	8.50e+05	1.44e+06	4.40e+05	2.01e+08	2.53e+06	0.00e+00	1.09e+06
I-134	4.49e-13	1.19e-12	4.28e-13	1.98e-11	1.88e-12	0.00e+00	1.57e-14
I-135	2.75e+03	7.09e+03	2.63e+03	4.56e+05	1.12e+04	0.00e+00	7.85e+03
Cs-134	2.94e+10	6.93e+10	3.22e+10	0.00e+00	2.20e+10	8.41e+09	8.62e+08
Cs-134m	9.40e-01	1.95e+00	1.00e+00	0.00e+00	1.08e+00	1.90e-01	1.30e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	9.98e+09	9.15e+09	2.14e+09	0.00e+00	3.49e+09	1.26e+09	1.60e+08
Cs-136	1.34e+09	5.29e+09	3.55e+09	0.00e+00	2.88e+09	4.54e+08	4.26e+08
Cs-137	4.02e+10	5.34e+10	1.86e+10	0.00e+00	1.82e+10	7.06e+09	7.60e+08
Cs-138	5.29e-23	1.02e-22	5.08e-23	0.00e+00	7.49e-23	8.72e-24	4.61e-26
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	1.01e-08	7.09e-12	2.94e-10	0.00e+00	6.69e-12	4.89e-12	8.99e-08
Ba-140	5.82e+06	7.14e+03	3.75e+05	0.00e+00	2.42e+03	4.80e+03	8.98e+06
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	9.73e-01	4.78e-01	1.27e-01	0.00e+00	0.00e+00	0.00e+00	2.75e+04
La-141	6.63e-06	2.04e-06	3.36e-07	0.00e+00	0.00e+00	0.00e+00	3.61e-01
La-142	4.12e-12	1.83e-12	4.56e-13	0.00e+00	0.00e+00	0.00e+00	5.57e-08
Ce-141	1.07e+03	7.12e+02	8.17e+01	0.00e+00	3.35e+02	0.00e+00	2.04e+06
Ce-143	9.18e+00	6.68e+03	7.46e-01	0.00e+00	2.99e+00	0.00e+00	2.01e+05
Ce-144	7.90e+04	3.27e+04	4.24e+03	0.00e+00	1.95e+04	0.00e+00	1.99e+07
Pr-143	3.48e+01	1.39e+01	1.73e+00	0.00e+00	8.08e+00	0.00e+00	1.15e+05
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	2.17e+01	2.36e+01	1.42e+00	0.00e+00	1.39e+01	0.00e+00	8.53e+04
Pm-147	6.18e+02	5.86e+01	2.39e+01	0.00e+00	1.12e+02	0.00e+00	5.58e+04
Pm-148	1.31e+01	2.13e+00	1.07e+00	0.00e+00	3.84e+00	0.00e+00	1.27e+05
Pm-148m	1.79e+02	4.54e+01	3.55e+01	0.00e+00	6.87e+01	0.00e+00	2.86e+05
Pm-149	9.45e-01	1.33e-01	5.45e-02	0.00e+00	2.53e-01	0.00e+00	1.96e+04
Pm-151	1.42e-01	2.34e-02	1.19e-02	0.00e+00	4.21e-02	0.00e+00	5.26e+03
Sm-151	5.22e+02	1.00e+02	2.36e+01	0.00e+00	1.10e+02	0.00e+00	3.41e+04
Sm-153	4.38e-01	3.63e-01	2.67e-02	0.00e+00	1.19e-01	0.00e+00	1.02e+04
Eu-152	1.46e+03	3.52e+02	3.10e+02	0.00e+00	1.63e+03	0.00e+00	1.29e+05
Eu-154	4.73e+03	6.10e+02	4.30e+02	0.00e+00	2.73e+03	0.00e+00	3.22e+05
Eu-155	1.02e+03	9.82e+01	6.08e+01	0.00e+00	3.84e+02	0.00e+00	5.63e+05
Eu-156	5.46e+01	4.09e+01	6.68e+00	0.00e+00	2.75e+01	0.00e+00	2.09e+05
Tb-160	3.18e+02	0.00e+00	3.97e+01	0.00e+00	1.26e+02	0.00e+00	2.06e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	2.14e+03	6.58e+02	4.76e+02	0.00e+00	9.63e+02	0.00e+00	1.62e+05
W-181	7.53e+03	2.43e+03	2.54e+02	0.00e+00	0.00e+00	0.00e+00	2.07e+05
W-185	2.87e+05	9.46e+04	1.00e+04	0.00e+00	0.00e+00	0.00e+00	8.17e+06
W-187	1.43e+03	1.17e+03	4.09e+02	0.00e+00	0.00e+00	0.00e+00	3.16e+05
Pb-210	1.34e+10	4.03e+09	5.19e+08	0.00e+00	1.27e+10	0.00e+00	1.75e+06
Bi-210	7.88e+04	5.39e+05	4.51e+04	0.00e+00	6.55e+06	0.00e+00	6.16e+06
Po-210	1.64e+08	3.45e+08	3.97e+07	0.00e+00	1.16e+09	0.00e+00	2.18e+07
Ra-223	2.71e+10	4.11e+07	5.40e+09	0.00e+00	1.18e+09	0.00e+00	1.30e+09
Ra-224	3.14e+09	7.50e+06	6.26e+08	0.00e+00	2.15e+08	0.00e+00	5.04e+08
Ra-225	4.20e+10	4.93e+07	8.38e+09	0.00e+00	1.41e+09	0.00e+00	1.46e+09
Ra-226	3.08e+12	7.78e+07	2.29e+12	0.00e+00	2.22e+09	0.00e+00	3.36e+09
Ra-228	1.30e+12	4.19e+07	1.44e+12	0.00e+00	1.20e+09	0.00e+00	5.68e+08
Ac-225	1.37e+04	1.86e+04	9.16e+02	0.00e+00	2.14e+03	0.00e+00	9.46e+05
Ac-227	1.22e+07	1.81e+06	7.29e+05	0.00e+00	5.26e+05	0.00e+00	5.18e+05
Th-227	6.19e+04	1.11e+03	1.79e+03	0.00e+00	6.35e+03	0.00e+00	1.82e+06
Th-228	3.98e+06	6.67e+04	1.35e+05	0.00e+00	3.75e+05	0.00e+00	3.49e+06
Th-229	8.56e+07	2.46e+06	1.42e+06	0.00e+00	1.19e+07	0.00e+00	4.95e+05
Th-230	1.29e+07	7.36e+05	3.59e+05	0.00e+00	3.58e+06	0.00e+00	3.82e+05
Th-232	1.45e+07	6.28e+05	9.75e+03	0.00e+00	3.06e+06	0.00e+00	3.25e+05
Th-234	4.07e+02	2.39e+01	1.18e+01	0.00e+00	1.36e+02	0.00e+00	4.32e+05
Pa-231	2.58e+07	9.69e+05	1.01e+06	0.00e+00	5.44e+06	0.00e+00	4.55e+05
Pa-233	2.76e+01	5.31e+00	4.74e+00	0.00e+00	2.00e+01	0.00e+00	6.06e+04
U-232	3.52e+09	0.00e+00	2.52e+08	0.00e+00	3.82e+08	0.00e+00	4.30e+07
U-233	7.42e+08	0.00e+00	4.51e+07	0.00e+00	1.74e+08	0.00e+00	3.98e+07
U-234	7.12e+08	0.00e+00	4.42e+07	0.00e+00	1.71e+08	0.00e+00	3.90e+07
U-235	6.82e+08	0.00e+00	4.15e+07	0.00e+00	1.60e+08	0.00e+00	4.95e+07
U-236	6.82e+08	0.00e+00	4.24e+07	0.00e+00	1.63e+08	0.00e+00	3.66e+07
U-237	1.25e+04	0.00e+00	3.33e+03	0.00e+00	5.14e+04	0.00e+00	3.31e+06
U-238	6.52e+08	0.00e+00	3.88e+07	0.00e+00	1.50e+08	0.00e+00	3.49e+07
Np-237	7.96e+06	5.71e+05	3.50e+05	0.00e+00	2.59e+06	0.00e+00	5.03e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Teen age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	7.98e+00	2.14e-01	1.24e-01	0.00e+00	7.32e-01	0.00e+00	1.57e+04
Np-239	8.42e-01	7.94e-02	4.41e-02	0.00e+00	2.49e-01	0.00e+00	1.28e+04
Pu-238	1.60e+06	2.05e+05	4.35e+04	0.00e+00	1.87e+05	0.00e+00	1.85e+05
Pu-239	1.83e+06	2.22e+05	4.81e+04	0.00e+00	2.05e+05	0.00e+00	1.69e+05
Pu-240	1.83e+06	2.22e+05	4.81e+04	0.00e+00	2.05e+05	0.00e+00	1.72e+05
Pu-241	4.18e+04	2.00e+03	8.81e+02	0.00e+00	4.08e+03	0.00e+00	3.53e+03
Pu-242	1.70e+06	2.14e+05	4.64e+04	0.00e+00	1.97e+05	0.00e+00	1.66e+05
Pu-244	1.98e+06	2.44e+05	5.31e+04	0.00e+00	2.26e+05	0.00e+00	2.47e+05
Am-241	4.73e+06	4.46e+06	3.41e+05	0.00e+00	2.55e+06	0.00e+00	4.66e+05
Am-242m	4.83e+06	4.25e+06	3.47e+05	0.00e+00	2.57e+06	0.00e+00	5.92e+05
Am-243	4.76e+06	4.40e+06	3.36e+05	0.00e+00	2.52e+06	0.00e+00	5.52e+05
Cm-242	1.61e+05	1.69e+05	1.07e+04	0.00e+00	4.86e+04	0.00e+00	4.59e+05
Cm-243	3.88e+06	3.60e+06	2.44e+05	0.00e+00	1.14e+06	0.00e+00	4.95e+05
Cm-244	3.01e+06	2.85e+06	1.90e+05	0.00e+00	8.89e+05	0.00e+00	4.78e+05
Cm-245	5.92e+06	5.21e+06	3.65e+05	0.00e+00	1.71e+06	0.00e+00	4.46e+05
Cm-246	5.88e+06	5.21e+06	3.64e+05	0.00e+00	1.70e+06	0.00e+00	4.39e+05
Cm-247	5.73e+06	5.13e+06	3.59e+05	0.00e+00	1.68e+06	0.00e+00	5.76e+05
Cm-248	4.76e+07	4.22e+07	2.96e+06	0.00e+00	1.38e+07	0.00e+00	9.27e+06
Cf-252	2.04e+06	0.00e+00	4.92e+04	0.00e+00	0.00e+00	0.00e+00	1.79e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	1.83e+03	1.83e+03	1.83e+03	1.83e+03	1.83e+03	1.83e+03
Be-10	1.33e+06	1.55e+05	3.35e+04	0.00e+00	1.10e+05	0.00e+00	2.71e+06
C-14	1.19e+09	2.39e+08	2.39e+08	2.39e+08	2.39e+08	2.39e+08	2.39e+08
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	2.37e-03	0.00e+00	2.35e-04	0.00e+00	0.00e+00	0.00e+00	6.41e-04
Na-22	2.28e+09	2.28e+09	2.28e+09	2.28e+09	2.28e+09	2.28e+09	2.28e+09
Na-24	1.07e+06	1.07e+06	1.07e+06	1.07e+06	1.07e+06	1.07e+06	1.07e+06
P-32	9.33e+10	4.37e+09	3.60e+09	0.00e+00	0.00e+00	0.00e+00	2.58e+09
Ca-41	2.74e+09	0.00e+00	2.99e+08	0.00e+00	0.00e+00	0.00e+00	1.50e+06
Sc-46	8.20e+01	1.12e+02	4.33e+01	0.00e+00	9.94e+01	0.00e+00	1.64e+05
Cr-51	0.00e+00	0.00e+00	1.22e+04	6.78e+03	1.85e+03	1.24e+04	6.48e+05
Mn-54	0.00e+00	2.52e+06	6.70e+05	0.00e+00	7.06e+05	0.00e+00	2.11e+06
Mn-56	0.00e+00	1.54e-03	3.48e-04	0.00e+00	1.86e-03	0.00e+00	2.23e-01
Fe-55	1.45e+06	7.71e+05	2.39e+05	0.00e+00	0.00e+00	4.36e+05	1.43e+05
Fe-59	1.56e+06	2.53e+06	1.26e+06	0.00e+00	0.00e+00	7.33e+05	2.63e+06
Co-57	0.00e+00	4.60e+05	9.32e+05	0.00e+00	0.00e+00	0.00e+00	3.77e+06
Co-58	0.00e+00	1.45e+06	4.45e+06	0.00e+00	0.00e+00	0.00e+00	8.49e+06
Co-60	0.00e+00	5.18e+06	1.53e+07	0.00e+00	0.00e+00	0.00e+00	2.87e+07
Ni-59	2.66e+08	7.08e+07	4.51e+07	0.00e+00	0.00e+00	0.00e+00	4.70e+06
Ni-63	3.56e+09	1.90e+08	1.21e+08	0.00e+00	0.00e+00	0.00e+00	1.28e+07
Ni-65	2.02e-01	1.90e-02	1.11e-02	0.00e+00	0.00e+00	0.00e+00	2.33e+00
Cu-64	0.00e+00	8.34e+03	5.04e+03	0.00e+00	2.02e+04	0.00e+00	3.92e+05
Zn-65	4.96e+08	1.32e+09	8.22e+08	0.00e+00	8.33e+08	0.00e+00	2.32e+08
Zn-69	1.18e-12	1.71e-12	1.58e-13	0.00e+00	1.04e-12	0.00e+00	1.08e-10
Zn-69m	9.68e+04	1.65e+05	1.95e+04	0.00e+00	9.58e+04	0.00e+00	5.37e+06
Se-79	0.00e+00	3.75e+08	8.31e+07	0.00e+00	6.09e+08	0.00e+00	2.46e+07
Br-82	0.00e+00	0.00e+00	1.38e+07	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	5.36e-02	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	8.40e-24	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	1.05e+09	6.47e+08	0.00e+00	0.00e+00	0.00e+00	6.77e+07
Rb-87	0.00e+00	1.17e+09	5.42e+08	0.00e+00	0.00e+00	0.00e+00	1.75e+07
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	1.39e+10	0.00e+00	3.97e+08	0.00e+00	0.00e+00	0.00e+00	5.38e+08
Sr-90	3.53e+11	0.00e+00	7.11e+09	0.00e+00	0.00e+00	0.00e+00	3.16e+09
Sr-91	2.75e+05	0.00e+00	1.04e+04	0.00e+00	0.00e+00	0.00e+00	6.07e+05
Sr-92	4.65e+00	0.00e+00	1.86e-01	0.00e+00	0.00e+00	0.00e+00	8.81e+01
Y-90	3.87e+01	0.00e+00	1.04e+00	0.00e+00	0.00e+00	0.00e+00	1.10e+05
Y-91	4.68e+03	0.00e+00	1.25e+02	0.00e+00	0.00e+00	0.00e+00	6.24e+05
Y-91m	3.36e-20	0.00e+00	1.22e-21	0.00e+00	0.00e+00	0.00e+00	6.59e-17
Y-92	3.07e-05	0.00e+00	8.78e-07	0.00e+00	0.00e+00	0.00e+00	8.87e-01
Y-93	1.22e-01	0.00e+00	3.35e-03	0.00e+00	0.00e+00	0.00e+00	1.82e+03
Zr-93	8.24e+02	3.09e+01	2.20e+01	0.00e+00	1.19e+02	0.00e+00	1.17e+04
Zr-95	4.60e+02	1.01e+02	9.00e+01	0.00e+00	1.45e+02	0.00e+00	1.05e+05
Zr-97	2.31e-01	3.33e-02	1.97e-02	0.00e+00	4.79e-02	0.00e+00	5.05e+03
Nb-93m	2.58e+05	6.45e+04	2.12e+04	0.00e+00	6.96e+04	0.00e+00	9.72e+06
Nb-95	3.81e+04	1.49e+04	1.06e+04	0.00e+00	1.40e+04	0.00e+00	2.75e+07
Nb-97	3.49e-12	6.31e-13	2.95e-13	0.00e+00	7.00e-13	0.00e+00	1.95e-07
Mo-93	0.00e+00	1.78e+08	6.40e+06	0.00e+00	4.70e+07	0.00e+00	9.03e+06
Mo-99	0.00e+00	9.77e+06	2.42e+06	0.00e+00	2.09e+07	0.00e+00	8.08e+06
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	1.32e+07	1.47e+07	5.28e+06	0.00e+00	1.73e+08	1.30e+06	1.54e+08
Tc-99m	1.60e+00	3.13e+00	5.19e+01	0.00e+00	4.55e+01	1.59e+00	1.78e+03
Ru-103	5.14e+02	0.00e+00	1.98e+02	0.00e+00	1.29e+03	0.00e+00	1.33e+04
Ru-105	4.62e-04	0.00e+00	1.68e-04	0.00e+00	4.06e-03	0.00e+00	3.02e-01
Ru-106	1.11e+04	0.00e+00	1.38e+03	0.00e+00	1.50e+04	0.00e+00	1.72e+05
Rh-105	1.88e+05	1.01e+05	8.62e+04	0.00e+00	4.02e+05	0.00e+00	6.25e+06
Pd-107	0.00e+00	4.66e+06	3.96e+05	0.00e+00	3.90e+07	0.00e+00	9.25e+06
Pd-109	0.00e+00	1.84e+04	5.51e+03	0.00e+00	9.86e+04	0.00e+00	1.09e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	2.51e+07	1.69e+07	1.35e+07	0.00e+00	3.15e+07	0.00e+00	2.01e+09
Ag-111	3.53e+06	1.10e+06	7.29e+05	0.00e+00	3.33e+06	0.00e+00	6.76e+08
Cd-113m	0.00e+00	1.20e+06	5.13e+04	0.00e+00	1.24e+06	0.00e+00	3.11e+06
Cd-115m	0.00e+00	5.15e+05	2.19e+04	0.00e+00	3.83e+05	0.00e+00	7.00e+06
Sn-123	2.93e+08	3.63e+06	7.14e+06	3.85e+06	0.00e+00	0.00e+00	1.44e+08
Sn-125	3.09e+07	4.66e+05	1.38e+06	4.83e+05	0.00e+00	0.00e+00	9.57e+07
Sn-126	8.22e+08	1.02e+07	2.33e+07	2.81e+06	0.00e+00	0.00e+00	6.17e+07
Sb-124	1.30e+07	1.69e+05	4.57e+06	2.88e+04	0.00e+00	7.23e+06	8.15e+07
Sb-125	1.04e+07	8.05e+04	2.19e+06	9.67e+03	0.00e+00	5.82e+06	2.49e+07
Sb-126	2.75e+06	4.21e+04	9.88e+05	1.61e+04	0.00e+00	1.31e+06	5.55e+07
Sb-127	2.38e+05	3.68e+03	8.26e+04	2.65e+03	0.00e+00	1.03e+05	1.34e+07
Te-125m	8.85e+06	2.40e+06	1.18e+06	2.48e+06	0.00e+00	0.00e+00	8.54e+06
Te-127	3.59e+02	9.67e+01	7.69e+01	2.48e+02	1.02e+03	0.00e+00	1.40e+04
Te-127m	2.50e+07	6.72e+06	2.96e+06	5.97e+06	7.12e+07	0.00e+00	2.02e+07
Te-129	1.59e-10	4.44e-11	3.78e-11	1.14e-10	4.65e-10	0.00e+00	9.90e-09
Te-129m	3.26e+07	9.09e+06	5.06e+06	1.05e+07	9.56e+07	0.00e+00	3.97e+07
Te-131	2.13e-33	6.48e-34	6.33e-34	1.63e-33	6.43e-33	0.00e+00	1.12e-32
Te-131m	1.92e+05	6.65e+04	7.07e+04	1.37e+05	6.43e+05	0.00e+00	2.70e+06
Te-132	1.23e+06	5.44e+05	6.58e+05	7.93e+05	5.05e+06	0.00e+00	5.48e+06
Te-133m	1.13e-13	4.59e-14	5.69e-14	8.80e-14	4.36e-13	0.00e+00	3.50e-12
Te-134	4.79e-19	2.15e-19	2.87e-19	3.78e-19	1.99e-18	0.00e+00	2.19e-18
I-129	4.12e+08	2.53e+08	2.26e+08	1.65e+11	4.26e+08	0.00e+00	1.27e+07
I-130	2.08e+05	4.20e+05	2.16e+05	4.63e+07	6.28e+05	0.00e+00	1.97e+05
I-131	1.56e+08	1.57e+08	8.94e+07	5.20e+10	2.58e+08	0.00e+00	1.40e+07
I-132	8.41e-02	1.54e-01	7.10e-02	7.17e+00	2.36e-01	0.00e+00	1.82e-01
I-133	2.06e+06	2.55e+06	9.66e+05	4.74e+08	4.25e+06	0.00e+00	1.03e+06
I-134	1.06e-12	1.98e-12	9.09e-13	4.54e-11	3.02e-12	0.00e+00	1.31e-12
I-135	6.52e+03	1.17e+04	5.55e+03	1.04e+06	1.80e+04	0.00e+00	8.94e+03
Cs-134	6.79e+10	1.11e+11	2.35e+10	0.00e+00	3.45e+10	1.24e+10	6.01e+08
Cs-134m	2.23e+00	3.30e+00	2.15e+00	0.00e+00	1.74e+00	2.88e-01	4.17e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	2.46e+10	1.71e+10	1.76e+09	0.00e+00	6.04e+09	2.02e+09	1.28e+08
Cs-136	3.04e+09	8.34e+09	5.40e+09	0.00e+00	4.44e+09	6.63e+08	2.93e+08
Cs-137	9.67e+10	9.26e+10	1.37e+10	0.00e+00	3.02e+10	1.09e+10	5.80e+08
Cs-138	1.28e-22	1.78e-22	1.13e-22	0.00e+00	1.25e-22	1.35e-23	8.21e-23
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	2.48e-08	1.32e-11	7.18e-10	0.00e+00	1.15e-11	7.78e-12	1.43e-06
Ba-140	1.41e+07	1.23e+04	8.20e+05	0.00e+00	4.01e+03	7.34e+03	7.12e+06
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	2.33e+00	8.15e-01	2.75e-01	0.00e+00	0.00e+00	0.00e+00	2.27e+04
La-141	1.63e-05	3.81e-06	8.27e-07	0.00e+00	0.00e+00	0.00e+00	8.47e-01
La-142	9.95e-12	3.17e-12	9.94e-13	0.00e+00	0.00e+00	0.00e+00	6.29e-07
Ce-141	2.62e+03	1.31e+03	1.94e+02	0.00e+00	5.74e+02	0.00e+00	1.63e+06
Ce-143	2.25e+01	1.22e+04	1.77e+00	0.00e+00	5.12e+00	0.00e+00	1.79e+05
Ce-144	1.95e+05	6.10e+04	1.04e+04	0.00e+00	3.38e+04	0.00e+00	1.59e+07
Pr-143	8.62e+01	2.59e+01	4.28e+00	0.00e+00	1.40e+01	0.00e+00	9.30e+04
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	5.34e+01	4.32e+01	3.35e+00	0.00e+00	2.37e+01	0.00e+00	6.85e+04
Pm-147	1.54e+03	1.10e+02	5.93e+01	0.00e+00	1.95e+02	0.00e+00	4.46e+04
Pm-148	3.19e+01	3.84e+00	2.48e+00	0.00e+00	6.52e+00	0.00e+00	1.03e+05
Pm-148m	3.67e+02	7.31e+01	7.31e+01	0.00e+00	1.08e+02	0.00e+00	2.06e+05
Pm-149	2.33e+00	2.48e-01	1.34e-01	0.00e+00	4.38e-01	0.00e+00	1.69e+04
Pm-151	3.46e-01	4.21e-02	2.74e-02	0.00e+00	7.13e-02	0.00e+00	4.78e+03
Sm-151	1.26e+03	1.88e+02	5.92e+01	0.00e+00	1.94e+02	0.00e+00	2.73e+04
Sm-153	1.08e+00	6.73e-01	6.49e-02	0.00e+00	2.05e-01	0.00e+00	8.95e+03
Eu-152	3.03e+03	5.51e+02	6.54e+02	0.00e+00	2.33e+03	0.00e+00	9.05e+04
Eu-154	1.14e+04	1.02e+03	9.33e+02	0.00e+00	4.49e+03	0.00e+00	2.37e+05
Eu-155	2.32e+03	1.67e+02	1.31e+02	0.00e+00	6.27e+02	0.00e+00	4.19e+05
Eu-156	1.32e+02	7.06e+01	1.46e+01	0.00e+00	4.55e+01	0.00e+00	1.60e+05
Tb-160	6.73e+02	0.00e+00	8.35e+01	0.00e+00	2.00e+02	0.00e+00	1.49e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	5.33e+03	1.12e+03	9.43e+02	0.00e+00	1.59e+03	0.00e+00	1.30e+05
W-181	1.85e+04	4.55e+03	6.25e+02	0.00e+00	0.00e+00	0.00e+00	1.66e+05
W-185	7.07e+05	1.76e+05	2.47e+04	0.00e+00	0.00e+00	0.00e+00	6.58e+06
W-187	3.47e+03	2.06e+03	9.22e+02	0.00e+00	0.00e+00	0.00e+00	2.89e+05
Pb-210	2.90e+10	7.45e+09	1.28e+09	0.00e+00	2.24e+10	0.00e+00	1.40e+06
Bi-210	1.94e+05	1.01e+06	1.11e+05	0.00e+00	1.13e+07	0.00e+00	5.10e+06
Po-210	4.05e+08	6.47e+08	9.77e+07	0.00e+00	2.01e+09	0.00e+00	1.74e+07
Ra-223	6.65e+10	7.69e+07	1.33e+10	0.00e+00	2.04e+09	0.00e+00	1.06e+09
Ra-224	7.72e+09	1.40e+07	1.55e+09	0.00e+00	3.71e+08	0.00e+00	4.24e+08
Ra-225	1.03e+11	9.24e+07	2.07e+10	0.00e+00	2.45e+09	0.00e+00	1.19e+09
Ra-226	4.54e+12	1.45e+08	3.73e+12	0.00e+00	3.85e+09	0.00e+00	2.69e+09
Ra-228	3.02e+12	7.83e+07	3.39e+12	0.00e+00	2.08e+09	0.00e+00	4.56e+08
Ac-225	3.37e+04	3.47e+04	2.26e+03	0.00e+00	3.71e+03	0.00e+00	7.72e+05
Ac-227	2.03e+07	3.27e+06	1.26e+06	0.00e+00	7.19e+05	0.00e+00	4.15e+05
Th-227	1.53e+05	2.08e+03	4.41e+03	0.00e+00	1.10e+04	0.00e+00	1.47e+06
Th-228	1.00e+07	1.28e+05	3.38e+05	0.00e+00	6.66e+05	0.00e+00	2.80e+06
Th-229	1.16e+08	2.92e+06	1.93e+06	0.00e+00	1.43e+07	0.00e+00	3.97e+05
Th-230	1.75e+07	8.79e+05	4.89e+05	0.00e+00	4.28e+06	0.00e+00	3.06e+05
Th-232	1.95e+07	7.50e+05	1.49e+04	0.00e+00	3.66e+06	0.00e+00	2.60e+05
Th-234	1.01e+03	4.45e+01	2.91e+01	0.00e+00	2.36e+02	0.00e+00	3.48e+05
Pa-231	3.49e+07	1.16e+06	1.39e+06	0.00e+00	6.32e+06	0.00e+00	3.64e+05
Pa-233	5.62e+01	8.76e+00	9.81e+00	0.00e+00	3.23e+01	0.00e+00	4.47e+04
U-232	8.68e+09	0.00e+00	6.22e+08	0.00e+00	6.61e+08	0.00e+00	3.44e+07
U-233	1.84e+09	0.00e+00	1.11e+08	0.00e+00	3.01e+08	0.00e+00	3.18e+07
U-234	1.76e+09	0.00e+00	1.09e+08	0.00e+00	2.95e+08	0.00e+00	3.12e+07
U-235	1.69e+09	0.00e+00	1.02e+08	0.00e+00	2.77e+08	0.00e+00	3.96e+07
U-236	1.69e+09	0.00e+00	1.05e+08	0.00e+00	2.83e+08	0.00e+00	2.92e+07
U-237	3.09e+04	0.00e+00	8.20e+03	0.00e+00	8.90e+04	0.00e+00	2.72e+06
U-238	1.61e+09	0.00e+00	9.58e+07	0.00e+00	2.59e+08	0.00e+00	2.79e+07
Np-237	1.10e+07	7.26e+05	4.83e+05	0.00e+00	2.99e+06	0.00e+00	4.03e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Child age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	1.97e+01	3.98e-01	3.07e-01	0.00e+00	1.27e+00	0.00e+00	1.36e+04
Np-239	2.07e+00	1.49e-01	1.05e-01	0.00e+00	4.30e-01	0.00e+00	1.10e+04
Pu-238	2.35e+06	2.72e+05	6.24e+04	0.00e+00	2.27e+05	0.00e+00	1.48e+05
Pu-239	2.55e+06	2.72e+05	6.54e+04	0.00e+00	2.41e+05	0.00e+00	1.35e+05
Pu-240	2.53e+06	2.82e+05	6.54e+04	0.00e+00	2.41e+05	0.00e+00	1.38e+05
Pu-241	7.62e+04	3.11e+03	1.58e+03	0.00e+00	5.83e+03	0.00e+00	2.84e+03
-----77-----							
Pu-242	2.35e+06	2.72e+05	6.30e+04	0.00e+00	2.31e+05	0.00e+00	1.32e+05
Pu-244	2.74e+06	3.12e+06	7.21e+04	0.00e+00	2.67e+05	0.00e+00	1.97e+05
Am-241	6.65e+06	5.72e+06	4.99e+05	0.00e+00	3.05e+06	0.00e+00	3.73e+05
Am-242m	6.91e+06	5.53e+06	5.13e+05	0.00e+00	3.11e+06	0.00e+00	4.74e+05
Am-243	6.61e+06	5.58e+06	4.85e+05	0.00e+00	2.99e+06	0.00e+00	4.42e+05
Cm-242	3.96e+05	3.16e+05	2.63e+04	0.00e+00	8.43e+04	0.00e+00	3.68e+05
Cm-243	6.31e+06	5.13e+06	4.06e+05	0.00e+00	1.52e+06	0.00e+00	3.96e+05
Cm-244	5.32e+06	4.30e+06	3.41e+05	0.00e+00	1.25e+06	0.00e+00	3.83e+05
Cm-245	8.24e+06	6.61e+06	5.18e+05	0.00e+00	2.03e+06	0.00e+00	3.57e+05
Cm-246	8.14e+06	6.61e+06	5.18e+05	0.00e+00	2.02e+06	0.00e+00	3.51e+05
Cm-247	7.95e+06	6.52e+06	5.08e+05	0.00e+00	1.99e+06	0.00e+00	4.62e+05
Cm-248	6.61e+07	5.38e+07	4.21e+06	0.00e+00	1.64e+07	0.00e+00	7.45e+06
Cf-252	5.10e+06	0.00e+00	1.23e+05	0.00e+00	0.00e+00	0.00e+00	1.44e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT'S MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
H-3	0.00e+00	2.78e+03	2.78e+03	2.78e+03	2.78e+03	2.78e+03	2.78e+03
Be-10	1.69e+06	2.46e+05	5.09e+04	0.00e+00	1.62e+05	0.00e+00	2.74e+06
C-14	2.34e+09	5.00e+08	5.00e+08	5.00e+08	5.00e+08	5.00e+08	5.00e+08
N-13	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
F-18	4.94e-03	0.00e+00	4.22e-04	0.00e+00	0.00e+00	0.00e+00	1.16e-03
Na-22	3.82e+09	3.82e+09	3.82e+09	3.82e+09	3.82e+09	3.82e+09	3.82e+09
Na-24	1.85e+06	1.85e+06	1.85e+06	1.85e+06	1.85e+06	1.85e+06	1.85e+06
P-32	1.92e+11	1.13e+10	7.46e+09	0.00e+00	0.00e+00	0.00e+00	2.60e+09
Ca-41	2.95e+09	0.00e+00	3.22e+08	0.00e+00	0.00e+00	0.00e+00	1.51e+06
Sc-46	1.56e+02	2.25e+02	7.03e+01	0.00e+00	1.48e+02	0.00e+00	1.47e+05
Cr-51	0.00e+00	0.00e+00	1.94e+04	1.26e+04	2.76e+03	2.46e+04	5.64e+05
Mn-54	0.00e+00	4.68e+06	1.06e+06	0.00e+00	1.04e+06	0.00e+00	1.72e+06
Mn-56	0.00e+00	3.77e-03	6.50e-04	0.00e+00	3.24e-03	0.00e+00	3.43e-01
Fe-55	1.76e+06	1.13e+06	3.03e+05	0.00e+00	0.00e+00	5.55e+05	1.44e+05
Fe-59	2.92e+06	5.10e+06	2.01e+06	0.00e+00	0.00e+00	1.51e+06	2.43e+06
Co-57	0.00e+00	1.07e+06	1.75e+06	0.00e+00	0.00e+00	0.00e+00	3.66e+06
Co-58	0.00e+00	2.91e+06	7.26e+06	0.00e+00	0.00e+00	0.00e+00	7.25e+06
Co-60	0.00e+00	1.06e+07	2.50e+07	0.00e+00	0.00e+00	0.00e+00	2.52e+07
Ni-59	3.13e+08	9.59e+07	5.40e+07	0.00e+00	0.00e+00	0.00e+00	4.74e+06
Ni-63	4.19e+09	2.59e+08	1.45e+08	0.00e+00	0.00e+00	0.00e+00	1.29e+07
Ni-65	4.27e-01	4.83e-02	2.20e-02	0.00e+00	0.00e+00	0.00e+00	3.68e+00
Cu-64	0.00e+00	2.07e+04	9.60e+03	0.00e+00	3.51e+04	0.00e+00	4.26e+05
Zn-65	6.66e+08	2.28e+09	1.05e+09	0.00e+00	1.11e+09	0.00e+00	1.93e+09
Zn-69	2.52e-12	4.54e-12	3.38e-13	0.00e+00	1.89e-12	0.00e+00	3.70e-10
Zn-69m	2.04e+05	4.17e+05	3.80e+04	0.00e+00	1.69e+05	0.00e+00	5.78e+06
Se-79	0.00e+00	9.33e+08	1.73e+08	0.00e+00	1.08e+09	0.00e+00	2.48e+07
Br-82	0.00e+00	0.00e+00	2.32e+07	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-83	0.00e+00	0.00e+00	1.14e-01	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-84	0.00e+00	0.00e+00	1.62e-23	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Br-85	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Rb-86	0.00e+00	2.67e+09	1.32e+09	0.00e+00	0.00e+00	0.00e+00	6.83e+07
Rb-87	0.00e+00	2.63e+09	1.04e+09	0.00e+00	0.00e+00	0.00e+00	1.77e+07
Rb-88	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Rb-89	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Sr-89	2.64e+10	0.00e+00	7.58e+08	0.00e+00	0.00e+00	0.00e+00	5.43e+08
Sr-90	3.91e+11	0.00e+00	7.92e+09	0.00e+00	0.00e+00	0.00e+00	3.19e+09
Sr-91	5.73e+05	0.00e+00	2.07e+04	0.00e+00	0.00e+00	0.00e+00	6.78e+05
Sr-92	9.89e+00	0.00e+00	3.67e-01	0.00e+00	0.00e+00	0.00e+00	1.07e+02
Y-90	8.18e+01	0.00e+00	2.19e+00	0.00e+00	0.00e+00	0.00e+00	1.13e+05
Y-91	8.79e+03	0.00e+00	2.34e+02	0.00e+00	0.00e+00	0.00e+00	6.30e+05
Y-91m	7.13e-20	0.00e+00	2.43e-21	0.00e+00	0.00e+00	0.00e+00	2.38e-16
Y-92	6.52e-05	0.00e+00	1.83e-06	0.00e+00	0.00e+00	0.00e+00	1.24e+00
Y-93	2.60e-01	0.00e+00	7.08e-03	0.00e+00	0.00e+00	0.00e+00	2.05e+03
Zr-93	9.53e+02	4.54e+01	2.73e+01	0.00e+00	1.34e+02	0.00e+00	1.18e+04
Zr-95	8.16e+02	1.99e+02	1.41e+02	0.00e+00	2.14e+02	0.00e+00	9.91e+04
Zr-97	4.89e-01	8.38e-02	3.83e-02	0.00e+00	8.45e-02	0.00e+00	5.35e+03
Nb-93m	3.03e+05	8.19e+04	2.56e+04	0.00e+00	8.00e+04	0.00e+00	9.79e+06
Nb-95	7.12e+04	2.93e+04	1.70e+04	0.00e+00	2.10e+04	0.00e+00	2.48e+07
Nb-97	7.39e-12	1.58e-12	5.68e-13	0.00e+00	1.23e-12	0.00e+00	4.97e-07
Mo-93	0.00e+00	4.18e+08	1.35e+07	0.00e+00	8.37e+07	0.00e+00	8.96e+06
Mo-99	0.00e+00	2.50e+07	4.87e+06	0.00e+00	3.73e+07	0.00e+00	8.23e+06
Tc-101	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Tc-99	2.67e+07	3.60e+07	1.12e+07	0.00e+00	3.04e+08	3.50e+06	1.56e+08
Tc-99m	3.32e+00	6.84e+00	8.82e+01	0.00e+00	7.36e+01	3.58e+00	1.99e+03
Ru-103	1.04e+03	0.00e+00	3.48e+02	0.00e+00	2.17e+03	0.00e+00	1.27e+04
Ru-105	9.75e-04	0.00e+00	3.28e-04	0.00e+00	7.17e-03	0.00e+00	3.88e-01
Ru-106	2.28e+04	0.00e+00	2.85e+03	0.00e+00	2.70e+04	0.00e+00	1.73e+05
Rh-105	3.98e+05	2.60e+05	1.75e+05	0.00e+00	7.23e+05	0.00e+00	6.47e+06
Pd-107	0.00e+00	1.17e+07	8.34e+05	0.00e+00	6.70e+07	0.00e+00	9.34e+06
Pd-109	0.00e+00	4.86e+04	1.17e+04	0.00e+00	1.79e+05	0.00e+00	1.19e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ag-110m	4.63e+07	3.38e+07	2.24e+07	0.00e+00	4.83e+07	0.00e+00	1.75e+09
Ag-111	7.40e+06	2.88e+06	1.52e+06	0.00e+00	6.01e+06	0.00e+00	6.86e+08
Cd-113m	0.00e+00	2.09e+06	7.70e+04	0.00e+00	1.58e+06	0.00e+00	3.14e+06
Cd-115m	0.00e+00	1.24e+06	4.31e+04	0.00e+00	6.48e+05	0.00e+00	7.07e+06
Sn-123	5.48e+08	8.57e+06	1.43e+07	8.61e+06	0.00e+00	0.00e+00	1.45e+08
Sn-125	6.45e+07	1.20e+06	2.86e+06	1.18e+06	0.00e+00	0.00e+00	9.66e+07
Sn-126	1.36e+09	1.79e+07	4.44e+07	4.71e+06	0.00e+00	0.00e+00	6.22e+07
Sb-124	2.51e+07	3.70e+05	7.78e+06	6.67e+04	0.00e+00	1.57e+07	7.75e+07
Sb-125	1.79e+07	1.74e+05	3.69e+06	2.25e+04	0.00e+00	1.04e+07	2.39e+07
Sb-126	5.04e+06	9.88e+04	1.82e+06	3.87e+04	0.00e+00	3.17e+06	5.22e+07
Sb-127	5.01e+05	8.93e+03	1.55e+05	6.37e+03	0.00e+00	2.58e+05	1.33e+07
Te-125m	1.81e+07	6.05e+06	2.45e+06	6.09e+06	0.00e+00	0.00e+00	8.62e+06
Te-127	7.61e+02	2.55e+02	1.64e+02	6.20e+02	1.86e+03	0.00e+00	1.60e+04
Te-127m	5.05e+07	1.68e+07	6.12e+06	1.46e+07	1.24e+08	0.00e+00	2.04e+07
Te-129	3.37e-10	1.16e-10	7.87e-11	2.83e-10	8.40e-10	0.00e+00	2.70e-08
Te-129m	6.69e+07	2.29e+07	1.03e+07	2.57e+07	1.67e+08	0.00e+00	3.99e+07
Te-131	4.51e-33	1.67e-33	1.27e-33	4.02e-33	1.15e-32	0.00e+00	1.82e-31
Te-131m	4.06e+05	1.63e+05	1.35e+05	3.31e+05	1.12e+06	0.00e+00	2.75e+06
Te-132	2.53e+06	1.25e+06	1.17e+06	1.85e+06	7.84e+06	0.00e+00	4.64e+06
Te-133m	2.37e-13	1.09e-13	1.04e-13	2.09e-13	7.40e-13	0.00e+00	1.17e-11
Te-134	9.91e-19	4.97e-19	5.12e-19	8.87e-19	3.35e-18	0.00e+00	1.14e-17
I-129	8.47e+08	6.28e+08	4.59e+08	4.03e+11	7.43e+08	0.00e+00	1.26e+07
I-130	4.27e+05	9.40e+05	3.77e+05	1.05e+08	1.03e+06	0.00e+00	2.01e+05
I-131	3.26e+08	3.85e+08	1.69e+08	1.26e+11	4.49e+08	0.00e+00	1.37e+07
I-132	1.74e-01	3.54e-01	1.26e-01	1.66e+01	3.95e-01	0.00e+00	2.87e-01
I-133	4.36e+06	6.35e+06	1.86e+06	1.15e+09	7.46e+06	0.00e+00	1.07e+06
I-134	2.21e-12	4.52e-12	1.61e-12	1.05e-10	5.05e-12	0.00e+00	4.67e-12
I-135	1.36e+04	2.70e+04	9.83e+03	2.42e+06	3.00e+04	0.00e+00	9.76e+03
Cs-134	1.09e+11	2.04e+11	2.06e+10	0.00e+00	5.25e+10	2.15e+10	5.54e+08
Cs-134m	4.64e+00	7.73e+00	3.90e+00	0.00e+00	2.98e+00	6.86e-01	6.12e+00

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Cs-135	3.94e+10	3.58e+10	1.87e+09	0.00e+00	1.02e+10	3.88e+09	1.29e+08
Cs-136	5.93e+09	1.74e+10	6.51e+09	0.00e+00	6.95e+09	1.42e+09	2.65e+08
Cs-137	1.54e+11	1.81e+11	1.28e+10	0.00e+00	4.85e+10	1.96e+10	5.65e+08
Cs-138	2.70e-22	4.40e-22	2.13e-22	0.00e+00	2.19e-22	3.42e-23	7.03e-22
Cs-139	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-139	5.27e-08	3.49e-11	1.53e-09	0.00e+00	2.10e-11	2.12e-11	3.34e-06
Ba-140	2.89e+07	2.89e+04	1.49e+06	0.00e+00	6.87e+03	1.78e+04	7.10e+06
Ba-141	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Ba-142	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
La-140	4.87e+00	1.92e+00	4.94e-01	0.00e+00	0.00e+00	0.00e+00	2.25e+04
La-141	3.47e-05	1.01e-05	1.75e-06	0.00e+00	0.00e+00	0.00e+00	1.15e+00
La-142	2.09e-11	7.67e-12	1.84e-12	0.00e+00	0.00e+00	0.00e+00	1.30e-06
Ce-141	5.20e+03	3.17e+03	3.74e+02	0.00e+00	9.79e+02	0.00e+00	1.64e+06
Ce-143	4.77e+01	3.16e+04	3.61e+00	0.00e+00	9.21e+00	0.00e+00	1.85e+05
Ce-144	2.79e+05	1.14e+05	1.56e+04	0.00e+00	4.62e+04	0.00e+00	1.60e+07
Pr-143	1.78e+02	6.67e+01	8.84e+00	0.00e+00	2.48e+01	0.00e+00	9.41e+04
Pr-144	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Nd-147	1.06e+02	1.09e+02	6.65e+00	0.00e+00	4.19e+01	0.00e+00	6.88e+04
Pm-147	1.88e+03	1.59e+02	7.72e+01	0.00e+00	2.37e+02	0.00e+00	4.50e+04
Pm-148	6.68e+01	9.65e+00	4.86e+00	0.00e+00	1.15e+01	0.00e+00	1.03e+05
Pm-148m	5.88e+02	1.49e+02	1.17e+02	0.00e+00	1.71e+02	0.00e+00	1.94e+05
Pm-149	4.96e+00	6.50e-01	2.84e-01	0.00e+00	7.91e-01	0.00e+00	1.75e+04
Pm-151	7.32e-01	1.07e-01	5.40e-02	0.00e+00	1.27e-01	0.00e+00	4.94e+03
Sm-151	1.43e+03	3.29e+02	7.10e+01	0.00e+00	2.24e+02	0.00e+00	2.75e+04
Sm-153	2.29e+00	1.77e+00	1.36e-01	0.00e+00	3.71e-01	0.00e+00	9.25e+03
Eu-152	3.32e+03	8.81e+02	7.43e+02	0.00e+00	2.47e+03	0.00e+00	7.82e+04
Eu-154	1.30e+04	1.81e+03	1.09e+03	0.00e+00	4.91e+03	0.00e+00	2.26e+05
Eu-155	2.61e+03	3.01e+02	1.56e+02	0.00e+00	6.75e+02	0.00e+00	4.04e+05
Eu-156	2.67e+02	1.66e+02	2.63e+01	0.00e+00	7.65e+01	0.00e+00	1.56e+05
Tb-160	1.05e+03	0.00e+00	1.31e+02	0.00e+00	2.99e+02	0.00e+00	1.40e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

GOAT's MILK PATHWAY DOSE FACTORS DUE TO RADIONUCLIDES OTHER THAN NOBLE GASES, R_i

R_i factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway R_i

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Ho-166m	6.17e+03	1.33e+03	1.05e+03	0.00e+00	1.76e+03	0.00e+00	1.31e+05
W-181	3.87e+04	1.19e+04	1.33e+03	0.00e+00	0.00e+00	0.00e+00	1.67e+05
W-185	1.48e+06	4.62e+05	5.27e+04	0.00e+00	0.00e+00	0.00e+00	6.62e+06
W-187	7.31e+03	5.08e+03	1.76e+03	0.00e+00	0.00e+00	0.00e+00	2.99e+05
Pb-210	3.23e+10	8.67e+09	1.45e+09	0.00e+00	2.64e+10	0.00e+00	1.42e+06
Bi-210	4.10e+05	2.64e+06	2.36e+05	0.00e+00	2.05e+07	0.00e+00	5.20e+06
Po-210	8.25e+08	1.58e+09	1.97e+08	0.00e+00	3.35e+09	0.00e+00	1.76e+07
Ra-223	1.38e+11	2.02e+08	2.77e+10	0.00e+00	3.67e+09	0.00e+00	1.08e+09
Ra-224	1.64e+10	3.69e+07	3.26e+09	0.00e+00	6.72e+08	0.00e+00	4.33e+08
Ra-225	2.14e+11	2.41e+08	4.25e+10	0.00e+00	4.40e+09	0.00e+00	1.20e+09
Ra-226	4.90e+12	3.76e+08	4.06e+12	0.00e+00	6.88e+09	0.00e+00	2.72e+09
Ra-228	3.39e+12	2.02e+08	3.81e+12	0.00e+00	3.71e+09	0.00e+00	4.59e+08
Ac-225	7.02e+04	9.01e+04	4.71e+03	0.00e+00	6.61e+03	0.00e+00	7.81e+05
Ac-227	2.21e+07	3.78e+06	1.37e+06	0.00e+00	7.69e+05	0.00e+00	4.19e+05
Th-227	3.13e+05	5.24e+03	8.99e+03	0.00e+00	1.93e+04	0.00e+00	1.49e+06
Th-228	1.19e+07	1.63e+05	4.04e+05	0.00e+00	7.63e+05	0.00e+00	2.82e+06
Th-229	1.24e+08	3.12e+06	2.07e+06	0.00e+00	1.50e+07	0.00e+00	4.00e+05
Th-230	1.88e+07	9.38e+05	5.23e+05	0.00e+00	4.50e+06	0.00e+00	3.08e+05
Th-232	2.09e+07	8.05e+05	8.14e+03	0.00e+00	3.85e+06	0.00e+00	2.62e+05
Th-234	2.04e+03	1.11e+02	5.90e+01	0.00e+00	4.10e+02	0.00e+00	3.51e+05
Pa-231	3.74e+07	1.23e+06	1.49e+06	0.00e+00	6.61e+06	0.00e+00	3.67e+05
Pa-233	9.66e+01	1.89e+01	1.69e+01	0.00e+00	5.19e+01	0.00e+00	4.53e+04
U-232	1.19e+10	0.00e+00	1.07e+09	0.00e+00	1.17e+09	0.00e+00	3.47e+07
U-233	2.51e+09	0.00e+00	1.91e+08	0.00e+00	5.33e+08	0.00e+00	3.21e+07
U-234	2.41e+09	0.00e+00	1.88e+08	0.00e+00	5.23e+08	0.00e+00	3.14e+07
U-235	2.31e+09	0.00e+00	1.76e+08	0.00e+00	4.90e+08	0.00e+00	4.00e+07
U-236	2.31e+09	0.00e+00	1.80e+08	0.00e+00	4.99e+08	0.00e+00	2.95e+07
U-237	6.47e+04	0.00e+00	1.73e+04	0.00e+00	1.61e+05	0.00e+00	2.76e+06
U-238	2.21e+09	0.00e+00	1.64e+08	0.00e+00	4.58e+08	0.00e+00	2.82e+07
Np-237	1.18e+07	7.85e+05	5.18e+05	0.00e+00	3.13e+06	0.00e+00	4.06e+05

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

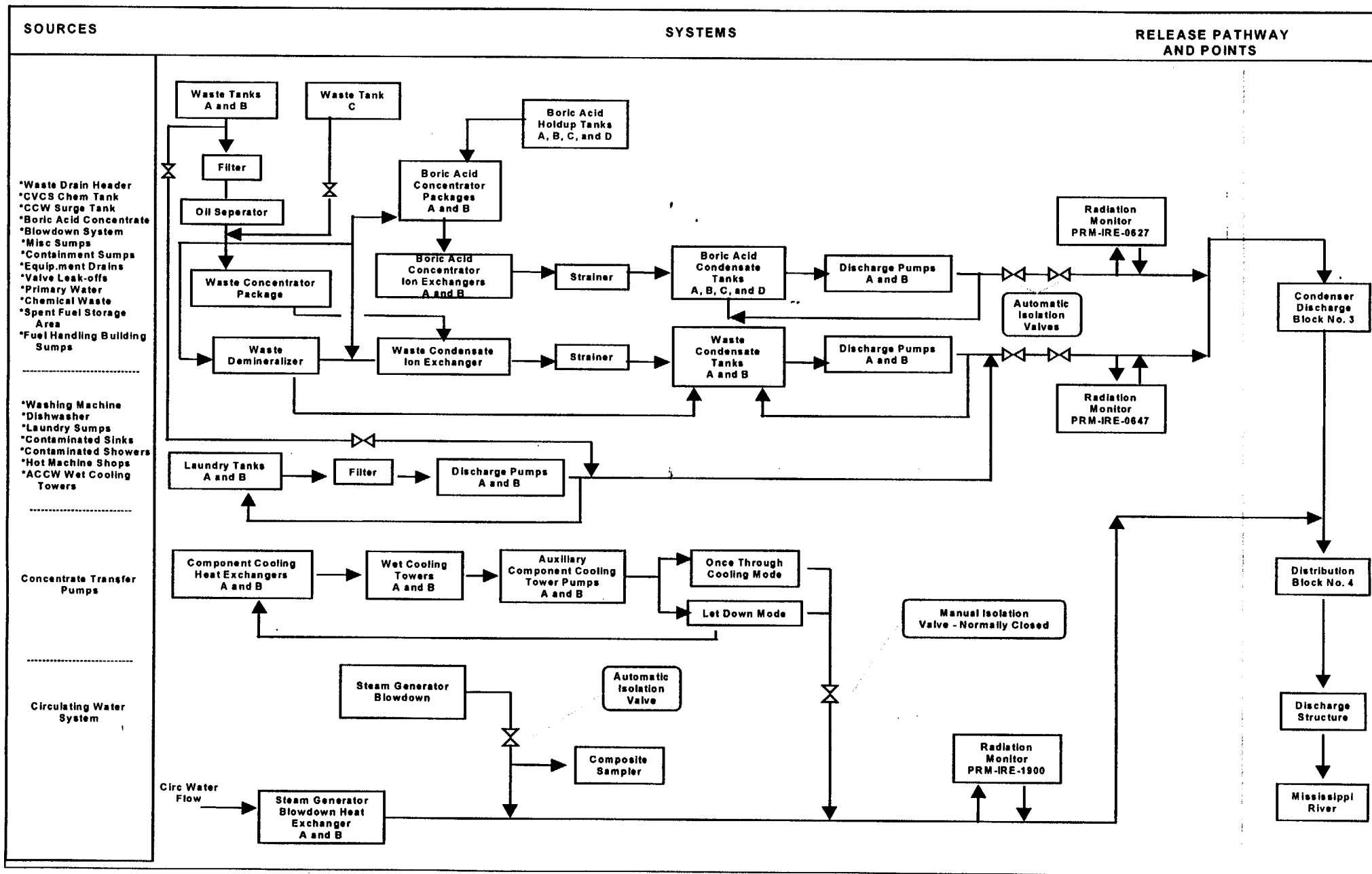
**GOAT's MILK PATHWAY DOSE FACTORS DUE TO
RADIONUCLIDES OTHER THAN NOBLE GASES, R_i**

Ri factors for Infant age group by nuclide.
Waterford Steam Electric Station
Pathway : Gaseous Release Goat's Milk Pathway Ri

Nuclide	Organ Dose Conversion Factors						
	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI-LLI
Np-238	4.19e+01	1.05e+00	6.48e-01	0.00e+00	2.30e+00	0.00e+00	1.41e+04
Np-239	4.38e+00	3.92e-01	2.21e-01	0.00e+00	7.81e-01	0.00e+00	1.13e+04
Pu-238	2.53e+06	2.96e+05	6.71e+04	0.00e+00	2.39e+05	0.00e+00	1.49e+05
Pu-239	2.72e+06	3.06e+05	6.99e+04	0.00e+00	2.53e+05	0.00e+00	1.36e+05
Pu-240	2.72e+06	3.06e+05	6.99e+04	0.00e+00	2.53e+05	0.00e+00	1.39e+05
Pu-241	8.37e+04	3.47e+03	1.74e+03	0.00e+00	6.24e+03	0.00e+00	2.86e+03
Pu-242	2.53e+06	2.94e+05	6.73e+04	0.00e+00	2.43e+05	0.00e+00	1.34e+05
Pu-244	2.94e+06	3.38e+05	7.72e+04	0.00e+00	2.78e+05	0.00e+00	1.99e+05
Am-241	7.14e+06	6.21e+06	5.33e+05	0.00e+00	3.20e+06	0.00e+00	3.76e+05
Am-242m	7.45e+06	6.02e+06	5.58e+05	0.00e+00	3.28e+06	0.00e+00	4.78e+05
Am-243	7.11e+06	6.07e+06	5.23e+05	0.00e+00	3.14e+06	0.00e+00	4.46e+05
Cm-242	6.17e+05	5.72e+05	4.10e+04	0.00e+00	1.18e+05	0.00e+00	3.71e+05
Cm-243	6.90e+06	5.67e+06	4.43e+05	0.00e+00	1.61e+06	0.00e+00	3.99e+05
Cm-244	5.81e+06	4.78e+06	3.74e+05	0.00e+00	1.33e+06	0.00e+00	3.86e+05
Cm-245	8.84e+06	7.16e+06	5.58e+05	0.00e+00	2.13e+06	0.00e+00	3.60e+05
Cm-246	8.74e+06	7.16e+06	5.58e+05	0.00e+00	2.13e+06	0.00e+00	3.54e+05
Cm-247	8.54e+06	7.06e+06	5.48e+05	0.00e+00	2.09e+06	0.00e+00	4.65e+05
Cm-248	7.06e+07	5.82e+07	4.52e+06	0.00e+00	1.73e+07	0.00e+00	7.50e+06
Cf-252	5.92e+06	0.00e+00	1.43e+05	0.00e+00	0.00e+00	0.00e+00	1.45e+06

Conversion factors are in units of square meter-mrem/yr per uCi/sec for all nuclides except H-3, which is in units of mrem/yr per uCi/cubic meter.

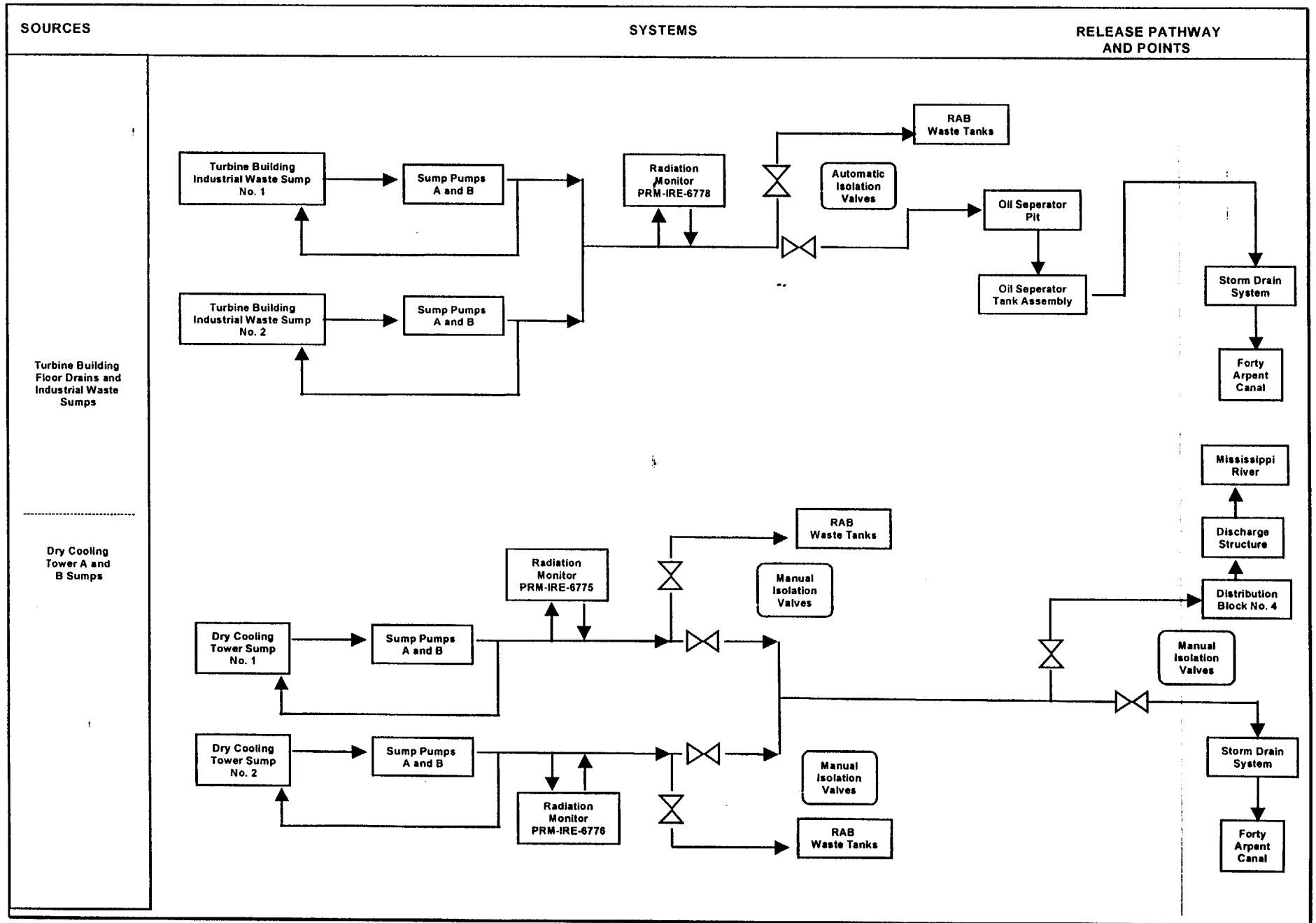
LIQUID WASTE MANAGEMENT SYSTEM EFFLUENT SOURCES AND RELEASE PATHWAYS AND POINTS



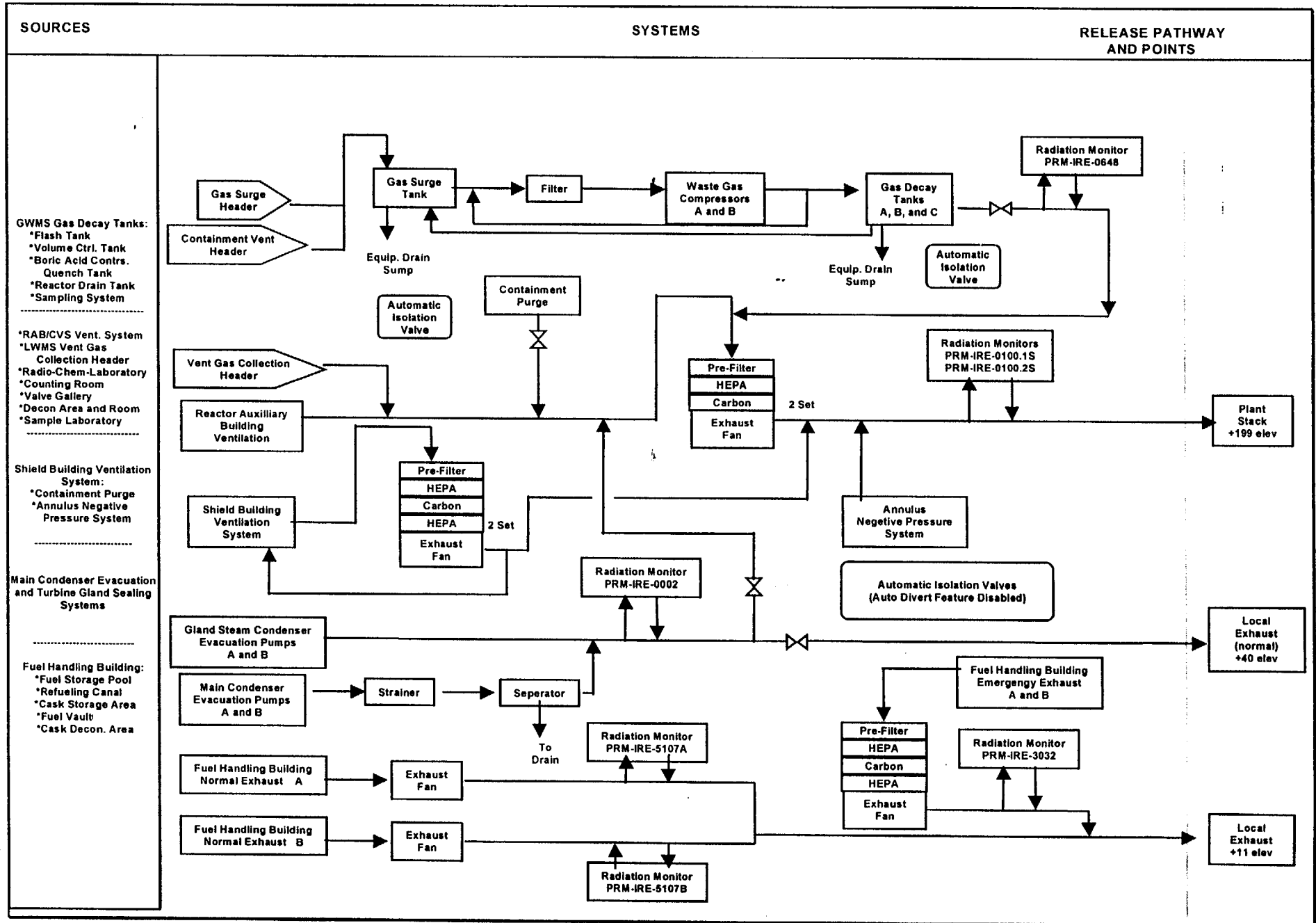
UNT-005-014 Revision 6

Attachment 7.11 (1 of 2)

LIQUID WASTE MANAGEMENT SYSTEM EFFLUENT SOURCES AND RELEASE PATHWAYS AND POINTS



GASEOUS EFFLUENT SOURCES, GASEOUS WASTE MANAGEMENT SYSTEM EFFLUENT SOURCES AND EXHAUST RELEASE POINTS



RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

SAMPLE	LOCATION	ANALYSIS	FREQUENCY*	VOLUME
TLD	A-2, B-1, C-1, D-2, E-1, F-2, G-2, H-2, J-2, K-1, L-1, M-1, N-1, P-1, Q-1, R-1, A-5, B-4, D-5, E-5 F-4, G-4, H-6, P-6, Q-5 R-6, F-9, G-9, E-15, J-15 E-30	TLD(1)	Quarterly	N/A
Radioiodine and Particulates	APP-1, APQ-1, APG-1,	Gross beta, I-131	Bi-Weekly	285m ³ /wk
	APC-1, APE-30	γ isotopic (2)	Quarterly composite	3700m ³ /qtr
Ground Water ⁽⁶⁾	GWK-1	γ ISOTOPIC, H-3	Quarterly	5 liters
Drinking Water/ Surface Water ⁽³⁾	DWP-7/SWP-7 DWG-2/SWG-2 DWE-5/SWE-5	H-3	Quarterly composite	Homogeneous 8 liters
		Gross beta, γ isotopic	Quarterly composite ⁽⁵⁾	
		I-131 ⁽⁷⁾	Monthly composite ⁽¹⁰⁾	
Shoreline Sediment	SHWE-3, SHWK-1	γ isotopic	Semi-annually	2 Kilograms
Milk	MKQ-5, MKQ-45 MKQ-40 MKQ-5, MKQ-45, MKQ-1	γ isotopic, I-131	Monthly ⁽⁸⁾	8 liters
Fish	FH-1, FH-2	γ isotopic	In season or Annually ⁽⁹⁾	500 grams
Broad Leaf	BLQ-1, BLB-1, BLK-15, BLE-20	γ isotopic, I-131	Monthly and When milk samples are not collected	500 grams
Sanitary System ⁽¹¹⁾	SWR-1	γ isotopic	Monthly Composite ⁽¹⁰⁾	Homogeneous 1 Liter

*Sample collection at specific locations may be increased at any time in order to increase the effectiveness of the REMP program.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

1. One or more instrument, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. A TLD is considered one phosphor, two or more phosphors in a packet are considered two or more dosimeters. Geographical limitations affect siting of dosimeters.
2. Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than ten times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples. Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.
3. Drinking Water and Surface Water samples are identical samples.
4. The downstream sample is beyond the mixing zone.
5. A composite sample will contain aliquots of sample taken proportional to the quantity of flowing liquid that results in a specimen representative of the liquid flow.
6. Ground water samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.
7. This analysis will be performed when the dose calculated for the consumption of water is greater than 1 mrem per year as calculated for maximum organ and age group.
8. If milk sampling is not performed, broad leafy vegetation will be sampled.
9. Striped mullet, gizzard shad, freshwater drum, and catfish will be collected. If they are not available, substitute species will be collected and identified in reporting.