OFFSITE DOSE ASSESSMENT MANUAL
for
GASEOUS AND LIQUID EFFLUENTS

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1.0 Introduction

This Manual describes acceptable methods of calculating radioactivity concentrations in the environment and the potentially resultant personal doses offsite** that are associated with LWR liquid and gaseous effluents. The radioactivity concentrations and dose estimates are used to demonstrate compliance with Environmental Technical Specifications required by 10 CFR 50.36. The methodology stated in this Manual is acceptable for use in demonstrating operational compliance with 10 CFR 20.106, 10 CFR 50 Appendix I, and 40 CFR 190. Only the dose attributable to the Duane Arnold Energy Center is considered in demonstrating compliance with 40 CFR 190 since no other nuclear facility exists within 50 miles of the Center.

Calculations are made monthly to assess the potential doses to air offsite and to a nearby resident in order to guide the management of station effluents. The receptor is described such that the dose to any resident near the Station is unlikely to be underestimated. Calculations made to assess the radioactive noble gas dose to air are based on the location offsite that could be occupied by a person where the maximum air dose is expected. For these monthly accumulated dose calculations, atmospheric dispersion and deposition of gaseous effluents is based on reference meteorological conditions.*** More conservative conditions (e.g., location and/or exposure pathways expected to yield higher computed doses) than appropriate for the maximally exposed person may be assumed in the dose estimated.

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* Dose is commonly used to mean personal dose equivalent commitment.

** Offsite means outside the exclusion area.

*** Reference meteorological conditions are 1971, 1974, and 1975 data composited as discussed in "Duane Arnold Energy Center, Evaluation of Liquid and Gaseous Effluent Releases in Accordance with 10 CFR 50 Appendix I," submitted to NRC June 3, 1976.

Calculations of dose committed from radioactive releases over extended time (3 and 12 months) are also made for the purpose of verifying compliance with regulatory limits on offsite dose. For these calculations the receptor is selected on the basis of the combination of applicable exposure pathways identified in the land use census and the maximum ground level X/Q at a residence, or on the basis of more conservative conditions such that the dose to any resident near the Station is unlikely to be underestimated.

2.0 Liquid Effluent

2.1 Radioactivity In Liquid Waste

The concentration of radionuclides in liquid waste is determined by sampling and analysis in accord with Table 4.14-2 of the Technical Specifications. When a radionuclide concentration is below the LLD for the analysis, it is not reported as being present in the sample.

2.2 Aqueous Concentration

Radioactive material in liquid effluent is diluted successively by water flowing in the discharge canal and in the River. The diluted concentration of radionuclide i in a receiving stream is estimated with the equation

$$C_{zi} = C_i \frac{F_1}{F_2}$$

where C_i = concentration of radionuclide i in liquid radwaste released (μCi/ml)

C_{zi} = concentration of radionuclide i in the receiving stream (μCi/ml)

F_1 = release rate of liquid radwaste (ml/sec)*

F_2 = dilution flow of receiving stream of water (ml/sec)*

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* F_1, F_2 and F_c may have any convenient units of flow (i.e., volume/time) provided the units of all are identical.

For the purpose of calculating the radioactivity concentration in water at the restricted area boundary (section 2.4), the flow in the discharge canal, F_c, is assigned to F_2.

In the River immediately beyond the discharge canal and the restricted area boundary, the effective dilution is

$$F_2 = F_c * M$$

where F_c = discharge canal flow (ml/sec)*

M = factor of additional mixing in the River

A near field mixing ratio from the canal into the near field of the River, M = 5, is assigned when estimating maximum potential individual doses involving exposure by eating fish or drinking water taken from the River. In the event water is drawn from the River downstream of the Station, F_2 represents the portion of the River flow into which the liquid effluent from the Station is effectively mixed.

2.3 Method of Establishing Alarm Setpoints

Liquid waste effluent monitors are connected to alarms which provide automatic indication when 10 CFR Part 20 Appendix B, Table 2, Column 2 concentrations are being exceeded offsite. With prompt action to reduce radioactive releases following an alarm, the liquid release limit of 10 CFR Part 20.106 and the limits provided by 10 CFR Part 50 Appendix I, Section IV should not be exceeded after the alarm.

The alarm setpoint for the liquid effluent radiation monitor is derived from the concentration limit provided in 10 CFR Part 20 Appendix B Table 2 Column 2 applied at the restricted area boundary where the discharge canal flows into the river. The alarm setpoint does not consider dilution, dispersion, or decay of radioactive material beyond the site boundary. That is, the alarm setpoint is based on a concentration limit at the end of the discharge canal. The radiation monitoring and isolation points are located in each line through which radioactive waste effluent is eventually discharged into the discharge canal.

The alarm setpoint for each liquid effluent monitor is based upon measurement, according to Table 4.14-2, of radioactivity in a batch of liquid to be released or in the continuous aqueous discharge. Alternately,

the alarm setpoint may be based upon gross β-γ activity analysis of the liquid waste provided the unrestricted area MPC for unidentified emitters, 1×10^{-7} μCi/ml, is observed.

2.3.1 Setpoint for a Batch Release. A sample of each batch of liquid radwaste is analyzed for I-131 and other principal gamma emitters, or for total activity concentration prior to release. The ratio, $FMPC_b$, of the activity concentration in the tank to the unrestricted area MPC (10 CFR Part 20, Appendix B, Table 2, Column 2) is calculated with the equation

$$FMPC_{bp} = \left(\sum_i \frac{C_{bpi}}{MPC_i}\right)_{identified} + \left(\frac{C_{bp}}{MPC}\right)_{unidentified}$$

where $FMPC_{bp}$ = fraction of unrestricted area MPC in batch derived from activity measured prior to release.

C_{bpi} = concentration of radionuclide i (including I-131 and principal gamma emitters) in barch sample taken prior to release (μCi/ml)

C_{bp} = concentration of unidentified radionuclides in batch sample taken prior to release (μCi/ml)

The concentration of unidentified radionuclides in liquid waste, C_{bp}, is the difference between the total activity concentration and the sum of activity concentrations of identified radionuclides. The MPC of unidentified radionuclides in these wastes is 1×10^{-7} μCi/ml.

When $FMPC_{bp}$ is derived from analyses identifying iodine and principal gamma emitters as well, the value $FMPC_{bp}$ is adjusted to account for radionuclides measured in the monthly and quarterly composite sample but not measured prior to release. This adjustment, derived from measurements during the previous calendar quarter, is calculated with the equation

$$FMPC_b = FMPC_{bp} \div E_b$$

where $E_b = \dfrac{\left(\text{Previous quarterly average of the fraction of MPC in the discharge canal due to I-131 and primary gamma emitters}\right)}{\left(\text{previous quarterly average of the fraction of MPC in the discharge canal due to all radionuclides in batch releases.}\right)}$

Whether radioiodine and primary gamma emitters are identified prior to a batch release or not, the liquid radwaste effluent line radiation monitor alarm setpoint is determined with the equation

$$S = \frac{A}{FMPC_b} \times \frac{F_{S2}}{F_{S1}} \times g$$

where S = radiation monitor alarm setpoint (cpm)

A = counting rate (cpm/ml) or activity concentration (μCi/ml) of sample in laboratory

g = ratio of effluent radiation monitor counting rate to laboratory counting rate or activity concentration in a given batch of liquid (cpm per cpm/l or cpm per μCi/ml)

F_{S1} = flow in the batch release line (gal/min).* Value not greater than the discharge line flow alarm maximum setpoint.

F_{S2} = minimum flow in the discharge canal (gal/min).* Value not less than the discharge canal flow alarm minimum setpoint.

Note that $A/FMPC_b$ represents the counting rate of a solution having the same radionuclide distribution as the sample and having the maximum permissible concentration of that mixture.

In the event gross β-γ analysis alone is used to determine the radioactivity in a batch prior to release, the fraction of the unrestricted area MPC in the batch is just

$$FMPC_{bp} = \frac{C_{bp}}{1 \times 10^{-7}}$$

and the fraction of the unrestricted area MPC at the restricted area boundary if the batch is released at a rate, F_1, is estimated by the equation

$$FMPC_b = \frac{C_{bp}}{1 \times 10^{-7}} \times \frac{F_1}{F_c}$$

where F_c represents the flow in the discharge canal.

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* Any suitable but identical units of flow (volume/time)

2.3.2 Setpoint for a Continuous Release. Continuous aqueous discharges are sampled and analyzed according to the schedule in Table 4.14-2. The ratio, $FMPC_c$, of the activity concentration in each of the continuous release streams to the unrestricted area MPC is calculated with the equations

$$FMPC_{cw} = \left(\sum_i \frac{C_{cwi}}{MPC_i}\right)_{\text{identified}} + \left(\frac{C_{cw}}{MPC}\right)_{\text{unidentified}}$$

where $FMPC_{cw}$ = fraction of unrestricted area MPC in continuous release based upon activity measured in weekly composite

C_{cwi} = concentration of radionuclide i (including I-131 and principal gamma emitters) in weekly composite sample (μCi/ml)

C_{cw} = concentration of unidentified radionuclides in weekly composite sample (μCi/ml)

$MPC_{unidentified} = 1 \times 10^{-7}$ μCi/ml

Adjustment for radionuclides measured in monthly and quarterly composite samples but not in weekly composite samples is given by the equation

$$FMPC_c = FMPC_{cw} \div E_c$$

where $E_c = \dfrac{\text{(quarterly average fraction of MPC in the discharge canal due to I-131 and primary gamma emitters measured in weekly composite samples of continuous releases during previous quarter)}}{\text{(quarterly average fraction of MPC in the discharge canal due to all radionuclides in samples of continuous releases during previous quarter.)}}$

The alarm setpoint of the radiation monitor on a continuous radioactive discharge line is determined with the equation

$$S = \frac{A}{FMPC_c} * \frac{F_{S2}}{F_{S1}} * g$$

where A = activity concentration (μCi/ml) or counting rate (cpm/ml) in laboratory of weekly composite sample.

F_{S1} = flow in the liquid discharge line (ml/sec). Value not greater than discharge line flow alarm maximum setpoint.

F_{S2} = flow in the discharge canal (ml/sec). Value not less than discharge canal flow alarm minimum setpoint.

2.4 Radioactivity Concentration in Water at the Restricted Area Boundary

Technical Specification 4.14.2 requires, that measured radioactivity concentrations in liquid releases be used to calculate the concentration in water at the restricted area boundary relative to the unrestricted area MPC.

The quarterly average radionuclide concentration in the discharge canal, expressed as a fraction of MPC, shall be computed from the following six components:

1) the average fraction of MPC of the nuclides measured by analyses prior to each batch release
2) the average fraction of MPC of the nuclides measured by the monthly composite analyses of the batch releases (H-3, P-32, alpha emitters)
3) the average fraction of MPC of the nuclides measured by the quarterly composite analysis of the batch releases (Sr-89, Sr-90, and Fe-55)
4) the average fraction of MPC of the nuclides measured by the weekly composite analyses of the continuous releases
5) the average fraction of MPC of the nuclides measured by the monthly composite analyses of the continuous releases (H-3, P-32, and alpha emitters)
6) the average fraction of MPC of the nuclides measured by the quarterly composite analysis of the continuous releases (Sr-89, Sr-90, and Fe-55).

This may be expressed by the following equation:

$$\overline{FMPC} = \frac{1}{t} \times \left(\sum_{p} FMPC_{bp} \, \Delta t_{bp} + \sum_{m} FMPC_{bm} \, \Delta t_{bm} + \sum_{q} FMPC_{bq} \, \Delta t_{bq} \right.$$

$$\left. \sum_{w} FMPC_{cw} \, \Delta t_{cw} + \sum_{m} FMPC_{cm} \, \Delta t_{cm} + \sum_{q} FMPC_{cq} \, \Delta t_{cq} \right)$$

where t is the number of hours in the averaging period (a quarter in this case, 2190 hours).

t_{bp} is the duration of the p-th batch release (hours)

t_{bm} is the sum of the durations of the batch releases which are included in the m-th monthly batch composite analysis (hours)

t_{bq} is the sum of the durations of the durations of the batch releases which are included in the q-th quarterly composite analysis (hours)

t_{cw} is the duration of the continuous release for the w-th weekly composite analysis (hours)

t_{cm} is the duration of the continuous release for the m-th monthly composite analysis (hours)

t_{cq} is the duration of the continuous release for the q-th quarterly analysis (hours)

FMPC is the fraction of unrestricted area MPC in the discharge canal. Modifying subscripts are:

- b, batch release
- c, continuous release
- p, the batch analysis index
- w, the weekly composite analysis index
- m, the monthly composite analysis index
- q, the quarterly composite analysis index.

In actual practice, the average fraction of MPC will be computed on a quarter-to-date basis. That is, as additional data become available, an updated average fraction of MPC may be computed from the previous average and the additional data with the equation

$$\overline{FMPC}_t = \frac{\overline{FMPC}_{t'} * t' + FMPC_{xy} * t_{xy}}{t}$$

where FMPC and t are as defined above and the subscript x represents either b or c, and the subscript y represents p, w, m, or q.

t' is the time period covered by the previous average

2.5 Accumulated Personal Maximum Dose

Technical Specification 4.14.3 requires the dose or dose commitment to a person offsite due to radioactive material released in liquid effluent to be calculated on a cumulative basis at least once every 31 days. The requirement is satisfied by computing the accumulated dose commitment to each organ and to the total body of a hypothetical person exposed by eating fish and drinking water taken from the river offsite near the discharge canal.

The accumulated dose commitment is computed at least once every 31 days but may be computed as analyses become available. The computation is made in the following way.

$$\Delta D_{ank} = 3.785 \times 10^{-3} \sum_i A_{eani} C_{ik} \sum_j \Delta t_j \frac{F_{1j}}{F_{2j}}$$

$$D_{an} = \sum_k \Delta D_{ank}$$

where ΔD_{ank} = the dose commitment (mrem) to organ n of age group a due to the isotopes identified in analysis k, where the analyses are those required by Table 4.14-2 of the Technical Specifications. Thus the contribution to the dose from gamma emitters become available on a batch basis for batch releases and on a weekly basis for continuous releases. Similarly the contributions from H-3 is available on a monthly basis and the contributions from Sr-89 and Sr-90 become available on a quarterly basis.

D_{an} = the dose commitment during the quarter-to-date to organ n, including total body, of the maximally exposed person in age group a (mrem).

A_{eani} = transfer factor relating a unit release of radionuclide i (Ci) in a unit stream flow (gal/min) to dose commitment to organ n, or total body, of an exposed person in age group a $\left(\frac{\text{mrem}}{\frac{\text{Ci}}{\text{gal/min}}}\right)$

C_{ik} = the concentration of radionuclide i in the undiluted liquid waste to be discharged (μCi/ml)

t_j = the period of time (minutes) during the release that F_1/F_2 is the ratio of the discharge flow to the dilution flow.

3.785×10^{-3} = conversion constant (3785 ml/gal * 10^{-6} Ci/μCi)

Pathway-to-dose transfer factors, A_{eani}, for use in calculating the dose commitment arising from radioactive material released in aqueous effluents are tabulated in Appendix A. Appropriate ones of the tables representing applicable environmental pathways of exposure and most exposed age group(s) are selected and used in calculating the dose commitment. The pathway(s) are/or age group(s) selected may vary by season.

Variables F_1 and F_2 are defined in section 2.2. In the river offsite near the discharge canal, $F_2 = 5\ F_c$.

2.6 Projected Personal Maximum Dose

Technical Specification 4.14.4.1 requires the doses to a person offsite due to radioactive material released in liquid effluent to be projected over a quarter at least one time during every month.

This requirement is satisfied by calculating the projected total body and organ dose commitments to a hypothetical person exposed by eating fish and drinking water taken from the River offsite near the discharge canal. The potential dose commitments to organs and to the total body are computed separately.

The quarterly dose commitment to a maximally exposed hypothetical person is projected monthly using the following equation:

$$P_{an} = \sum_p \Delta D_{banp} + \sum_m \Delta D_{banm} + \Delta D_{banq} + \sum_w \Delta D_{canw} + \sum_m \Delta D_{canm} + \Delta D_{canq}$$

where P_{an} is the projected dose commitment (mrem) to organ n (including total body) of age group a for the current quarter.

$\sum_p \Delta D_{banp}$ is the dose commitment (mrem) to organ n of age group a for the isotopes identified in the analyses prior to the release of each batch in the last three months.

$\sum_m \Delta D_{banm}$ is the dose commitment (mrem) to organ n of age group a for the isotope (H-3) identified in the monthly composite analyses of batch releases for each of the last three months

D_{banq} is the dose commitment (mrem) to organ n of age group a for the isotopes (Sr-89, Sr-90) identified in the most recent quarterly composite analysis of batch releases.

$\sum_{w} \Delta D_{canw}$ is the dose commitment to organ n of age group n for the isotopes identified in the weekly composite analyses of continuous releases for each week in the last three months

$\sum_{m} \Delta D_{canm}$ is the same as $\sum_{m} \Delta D_{banm}$ but for continuous releases

ΔD_{canq} is the same as ΔD_{banq} but for continuous releases

3.0 Gaseous Effluent

3.1 Introduction

The Station discharges gaseous effluent through a stack and discharges ventilation air from the reactor and radwaste buildings through the reactor building vents. Ventilation air from the Turbine Building may be discharged through the Turbine Building vents or through the Reactor Building vent. These gaseous effluent streams, radioactivity monitoring points, and effluent discharge points are shown schematically in Figure 3-1. Gaseous release point locations and elevations at the Station are described in Table 3-1. Gaseous discharges from the stack are treated as an elevated release while discharges via the building vents are assumed to be ground-level releases.

3.2 Radioactivity in Gaseous Effluent

For the purpose of estimating offsite radionuclide concentrations and radiation doses, measured radionuclide concentrations in gaseous effluent and in ventilation air exhausted from the Station are relied upon. Table 4.15-2 in the Technical Specifications identifies specific radionuclides in gaseous discharges for which sampling and analysis is done.

When a radionuclide concentration is below the LLD for the analysis, it is not reported as being present in the sample. Carbon-14 is assumed to be discharged from the stack at the rate of 9.5 curies per year.

3.3 Main Condenser Air Ejector Noble Gas Monitor Alarm Setpoint

A noble gas activity monitor is provided to measure gross gamma activity in gases at the main condenser air ejector. The monitor includes an alarm that is set to report when the gamma radiation level in gas discharged by the main condenser air ejector indicates the gross radioactivity discharge rate exceeds 100 μCi/(MWt·sec).

The alarm setpoint is determined with the relation

$$S = \frac{100\ Pg}{F}$$

where S = main condenser air ejector noble gas monitor alarm setpoint (cpm) or (mR/hr)

P = nominal reactor thermal power (MWt)

F = air ejector discharge rate (ft^3/min)

g = noble gas monitor calibration or counting rate response for gamma radiation $\frac{\text{cpm}}{\mu\text{Ci/(sec cfm)}}$ or $\frac{\text{mR/hr}}{\mu\text{Ci/(sec cfm)}}$

100 = discharge rate limit of gross radioactivity in noble gas (μCi/(MWt sec)).

3.4 Effluent Noble Gas Monitor Alarm Setpoint

Instrumentation is provided to monitor gamma radiation from radioactive materials released from the Station in gaseous effluents. Each monitor includes an alarm that is set to report when the radioactive noble gas in gaseous effluent from a monitored stack or vent is expected to cause a noble gas concentration at ground level offsite equal to or greater than specified in 10 CFR Part 20 Appendix B Table 2 Column 1 for the mixture.

The unrestricted area concentration specified by 10 CFR Part 20.106 and the limits of 10 CFR Part 50 Appendix I Section IV should not be exceeded after an alarm provided prompt action is taken after alarm initiation to reduce radioactive releases.

The distribution of radioactive noble gases in a gaseous effluent stream is determined by gamma spectrum analysis of identifiable radionuclides in effluent gas sample(s). Results of one or more previous analyses may be averaged to obtain a representative spectrum. In the event the distribution is unobtainable from measured data, the distribution of radioactive noble gases computed by the BWR-GALE code and appearing in Table 3-2 herein may be assumed.

The gross activity concentration of noble gas corresponding to the 10 CFR Part 20 Appendix B Table 2 Column 1 limit is calculated from the distribution with the equation

$$MPC = \sum_i C_i \div \sum_i \frac{C_i}{MPC_i}$$

where MPC = gross activity concentration of noble gas mixture corresponding to 10 CFR 20 Appendix B Table 2 Column 1 limit ($\mu Ci/cm^3$)

C_i = relative concentration of noble gas radionuclide i in gaseous release ($\mu Ci/cm^3$)

MPC_i = 10 CFR Part 20 Appendix B Table 2 Column 1 value.

Note that this is simply the aggregate of the concentrations of radionuclide i in a sample divided by the fraction of MPC constituted by radionuclide i in the same sample.

The alarm setpoint for the effluent noble gas monitor is then calculated with the equation

$$S = \frac{MPC * h}{4.7 \times 10^{-4} * F * \frac{X}{Q}}$$

where S = alarm counting rate setpoint (cpm) or (mR/hr)

h = effluent noble gas monitor counting rate response $\left(\frac{cpm}{\mu Ci/cm^3}\right)$ or calibration $\left(\frac{mR/hr}{\mu Ci/cm^3}\right)$ for noble gas gamma radiation

F = discharge rate of gaseous effluent (ft^3/min)

X/Q = minimum atmospheric dispersion from release point to unrestricted area ($\mu Ci/cm^3$ per $\mu Ci/sec$)

4.7×10^{-4} = conversion constant $\left(\frac{1\ m^3}{35.31\ ft^3} * \frac{1\ min}{60\ sec}\right)$

MPC = maximum permissible concentration according to 10 CFR Part 20, Appendix B, Table 2, Column 1 ($\mu Ci/cm^3$)

The value of X/Q adopted in a setpoint calculation will be based either on prevailing meteorological conditions or on reference meteorological conditions. Minimum atmospheric dispersion offsite derived from reference meteorological conditions at the site boundary 1260 meters NNW of the Station are:

$$\left(\frac{X}{Q}\right)_{stack} = 2.8 \times 10^{-7}\ sec/m^3$$

$$\left(\frac{X}{Q}\right)_{vent} = 4.3 \times 10^{-6}\ sec/m^3$$

3.5 Noble Gas Gamma Radiation Dose Accumulated in Air

Technical Specification 3.15.3 requires that the offsite air dose during any calendar quarter not exceed 5 mrad from noble gas gamma radiation. Specification 4.15.3.2 requires a monthly calculation on a cumulative basis of air dose due to gamma radiation from radioactive noble gas released in gaseous effluents.

The distribution of radioactive noble gases in gaseous releases is determined by gamma spectrum analysis of gaseous effluent samples in accord with Technical Specification Table 4.15-2. In the event the radioactive noble gas distribution is not obtainable from sample(s) taken during the current period the distribution will be obtained from the most recently available data or from Table 3-2.

The quantity of radioactive noble gas discharged during an interval of time is determined by integrating the release rate measurement of each effluent noble gas monitor. The total measured radioactivity discharged via a stack or vent during a counting interval is determined by the relation

$$\Delta Q_j = \frac{60\ N\ F}{h}$$

where ΔQ_j = total measured gaseous radioactivity release via a stack or vent during counting interval j (μCi)

60 = conversion constant (sec/min)

N = counts accumulated during counting interval j

F = discharge rate of gaseous effluent stream (ft^3/min)

h = effluent noble gas monitor calibration or counting rate response for noble gas gamma radiation $\left(\frac{cpm}{\mu Ci/m^3}\right)$

If g_i represents the fraction of radionuclide i in the distribution of radioactive gases in a given effluent stream, then the quantity of radionuclide i released in a given gaseous effluent stream during counting interval j is estimated by the relation

$$\Delta Q_{ij} = \Delta Q_j \cdot g_i$$

The gamma radiation dose to air offsite as a consequence of noble gas discharged from DAEC is calculated with the

$$D_\gamma = \sum_i \sum_j \left(\Delta Q_j \cdot g_i \cdot A\gamma_i\right)_s + \sum_i A\gamma_v \sum_i \left(\Delta Q_j \cdot g_i \cdot \frac{X}{Q}\right)_v$$

where D_γ = noble gas gamma dose to air due to effluent from stack and vent (mrad)

$A\gamma_{s_i}$ = factor converting unit release of noble gas radionuclide i from the stack to air dose at ground-level received from gamma radiation from the overhead plume (mrad/μCi)

$A\gamma_{v_i}$ = factor converting time integrated, ground-level concentration of noble gas to air dose from gamma radiation $\left(\frac{\text{mrad}}{(\mu\text{Ci sec})/\text{m}^3}\right)$

$(X/Q)_v$ = atmospheric dispersion factor for a vent (ground-level or building wake) discharge (sec/m^3)

Specification 4.15.3.2 is satisfied by calculating the noble gas gamma radiation dose to air at the offsite location identified in Figure 3-2. At that location, 1260 meters NNW of the Station, the reference* atmospheric dispersion factor to be used is

$$\left(\frac{X}{Q}\right)_{cv} = 4.3 \times 10^{-6} \text{ sec/m}^3$$

Values of $A\gamma_{s_i}$ and $A\gamma_{v_i}$ appropriate for use at that location, assuming reference meteorological conditions, are listed in Table 3-3.

3.6 Noble Gas Beta Radiation Dose Accumulated in Air

Technical Specification 3.15.3 requires that the offsite air dose during any calendar quarter not exceed 10 mrad from noble gas beta radiation. Specification 4.15.3.2 requires the air dose to be calculated monthly on a cumulative basis.

The radioactive noble gas distribution and activity discharged are determined as described in § 3.5 herein.

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*Reference atmospheric conditions are summarized and discussed in "Duane Arnold Energy Center, Evaluation of Liquid and Gaseous Effluent Releases in Accordance with 10 CFR 50 Appendix I," submitted to NRC June 3, 1976, Reference atmospheric dispersion factors tabulated therein, also appear in Appendix B herein.

The beta radiation dose to air offsite as a consequence of noble gas released from the Station is calculated with the equation:

$$D_\beta = \sum_i A\beta_i \sum_j \left(\Delta Q_j \; g_i \; \frac{X}{Q}\right)_s + \sum_i A\beta_i \sum_j \left(\Delta Q_j \; g_i \; \frac{X}{Q}\right)_v$$

where D_β = noble gas beta dose to air due to stack and vent releases (mrad)

$A\beta_i$ = factor converting time-integrated, ground-level concentration of noble gas radionuclide i to air dose from beta radiation $\left(\frac{\text{mrad}}{(\mu\text{Ci sec})/\text{m}^3}\right)$

$(X/Q)_s$ = atmospheric dispersion factor for a discharge via the stack (sec/m^3)

$(X/Q)_v$ = atmospheric dispersion factor for a vent (ground level or building wake) discharge (sec/m^3).

Specification 4.15.3.2 is satisfied by calculating the noble gas beta radiation dose to air at the location identified on Figure 3-2. At that location, 1260 meters NNW of the reactor, the reference atmospheric dispersion factors to be used are

$$\left(\frac{X}{Q}\right)_{cs} = 2.8 \times 10^{-7}$$

$$\left(\frac{X}{Q}\right)_{cv} = 4.3 \times 10^{-6}$$

Beta radiation-to-air dose conversion factors, $A\beta_i$, for noble gas radionuclides are listed in Table 3-3.

3.7 Dose Due to Iodine and Particulates in Gaseous Effluents*

Technical Specification 3.15.4 requires that radioiodine, radioactive material in particulate form, and radionuclides with half-lives greater than 8 days in gaseous effluents released to the area offsite cause no more than 7.5 mrem to any organ of a member of the public during a calendar quarter. Specification 4.15.4.2 requires the dose to be calculated at least once every month.

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*The dose to any organ of a person arising from radioactive iodine, radioactive material in particulate form, and radionuclides with half-lives greater than 8 days. Noble gases not considered.

Radionuclides other than noble gases in gaseous effluents that are measured by the sampling and analysis program described in Technical Specification Table 4.15-2 are used at the release term in dose calculations. Airborne releases are discharged either via a stack as an elevated release or via building vents and treated as a ground level or split wake release. For each of these release combinations, samples are analyzed weekly, monthly, quarterly, or for a specific release according to Table 4.15-2.

Each sample provides a measure of the concentration of specific radionuclides, C_i, in gaseous effluent discharged at flow, F_a, during a time increment Δt. Thus, each release is quantified according to the relation.

$$\Delta Q_{ijk} = C_{ik} F_{aj} \Delta t_j$$

$$Q_{ik} = \sum_j C_{ik} F_{aj} \Delta t_j$$

where Q_{ik} = the quantity of radionuclide i released in a given effluent stream based on analysis k

C_{ik} = concentration of radionuclide i in gaseous effluent identified by analysis k

F_{aj} = effluent stream discharge rate during time increment Δt_j (m^3/sec)

Δt_j = time increment during which radionuclide i at concentration C_{ik} is being discharged (sec)

A person may be exposed directly to an airborne concentration of radioactive material discharged in effluent and indirectly via pathways involving deposition of radioactive material onto the ground. Dose estimates account for the separate exposure pathways. The dose commitment to a person offsite associated with a gaseous release, Q_{ik}, of radioactive material other than noble gas is calculated with the appropriate one(s) of the following equations

for a stack release:

$$D_{ansk} = Q_{iks}\left[\sum_i TA_{ani}\left(\frac{X}{Q}\right)_s + \sum_i TG_{ani}\left(\frac{D}{Q}\right)_s\right]$$

for a vent release

$$D_{anvk} = Q_{ikv}\left[\sum_i TA_{ani}\left(\frac{X}{Q}\right)_v + \sum_i TG_{ani}\left(\frac{D}{Q}\right)_v\right]$$

where D_{ansk} = the dose commitment (mrem) to organ n of a person in age group a due to radionuclides identified in analysis k of a stack release where the analysis is required by Technical Specification Table 4.15-2.

D_{anvk} = the dose commitment from a vent release (mrem)

TA_{ani} = factor converting airborne concentration of radionuclide i to dose commitment to organ n of a person in age group a = where exposure is directly to airborne material $\left(\frac{\text{mrem}}{(\mu\text{Ci sec})/\text{m}^3}\right)$

TG_{ani} = factor converting ground deposition of radionuclide i to dose commitment to organ n of a person in age group a where exposure is directly or indirectly to radioactive material that has been deposited on the ground $\left(\frac{\text{mrem}}{\mu\text{Ci/m}^2}\right)$

The analysis index k may represent either

p, analysis of a grab sample

w, a weekly composite analysis

m, a monthly composite analysis

q, a quarterly composite analysis

The dose commitment accumulated by a person offsite is computed at least every 31 days to satisfy Specification 4.15.4.2 but may be calculated as analytical results of effluent measurements, performed as specified in Table 4.15-2 in the Technical Specification, become available.

The dose accumulated as a result of stack discharge is computed with

$$D_{ans} = \sum_{p} D_{ansp} + \sum_{w} D_{answ} + \sum_{m} D_{ansm} + \sum_{q} D_{ansq}$$

and the dose accumulated as a result of vent discharge is computed with

$$D_{anv} = \sum_{w} D_{anvw} + \sum_{m} D_{anvm} + \sum_{q} D_{anvq}$$

Doses committed during the same time period due to discharges from the stack and vents are additive, thus

$$D_{an} = D_{ans} + \sum_{v} D_{anv}$$

where D_{an} = the dose commitment accumulated during the quarter to date as a result of all measured radioactive gaseous discharges except noble gases to any organ n, including total body, of a person offsite in age group a (mrem).

When the dose to a person from iodine and particulates discharged in gaseous effluents is calculated as required by Specification 4.15.4.2, appropriate environmental pathways (from among those for which dose transfer factors are provided in Appendix A) will be evaluated. The dose calculated is to a receptor at the location identified in Figure 3-2 where reference atmospheric dispersion and deposition factors are:

$$\frac{X}{Q}_{cs} = 3.1 \times 10^{-7} \text{ sec/m}^3 \qquad \frac{D}{Q}_{cs} = 7.2 \times 10^{-9} \text{ m}^{-2}$$

$$\frac{X}{Q}_{cv} = 3.9 \times 10^{-6} \text{ sec/m}^3 \qquad \frac{D}{Q}_{cv} = 1.3 \times 10^{-8} \text{ m}^{-2}$$

Food pathways are evaluated with reference meteorology applicable at the location of food production.

3.8 Dose to a Person from Noble Gases

Technical Specification 4.16.1 requires the calculation of the dose or dose commitment to a person offsite exposed to 12 consecutive months of radioactive liquid and gaseous effluents from the Station. One component

of personal dose is total body irradiation by gamma rays from noble gases. Another is irradiation of skin by beta and gamma radiation from noble gases. The methods of calculating these doses are presented in sections 3.8.1 and 3.8.2.

The amount of radioactive noble gas discharged is determined in the manner described in section 3.5.

3.8.1 Gamma Dose to Total Body The gamma radiation dose to the whole body of a member of the public as a consequence of noble gas released from the Station is calculated with the equation:

$$D_\gamma = \sum_i \left(Q_i * PY_i\right)_s + \sum_i \left(Q_i * \frac{X}{Q} * PY_i\right)_v$$

where D_γ = noble gas gamma dose to total body (mrem)

PY_{s_i} = factor converting unit noble gas nuclide i stack release to total body dose at ground level received from the overhead plume (mrem/μCi)

PY_{v_i} = factor converting time integrated, ground level concentration of noble gas nuclide i to air dose from gamma radiation $\left(\frac{\text{mrem}}{(\mu\text{Ci sec})/\text{m}^3}\right)$

When the total body dose due to gamma radiation from noble gas is computed as required by Technical Specification 4.16.1, the nearby resident exposed to maximal ground-level noble gas concentrations (maximum X/Q) is selected as the receptor.

Noble gas plume gamma-to-total body dose factors, PY_{s_i}, are calculated with the RABFIN program. Noble gas semi-infinite cloud gamma-to-total body dose factors, PY_{v_i}, are listed in Table 3-4.

3.8.2 Dose to Skin The beta radiation dose to the skin of a member of the public due to beta radiation from noble gas released from the Station may be calculated with the equation

$$D_\beta = \sum_i S\beta_i \left(Q_i * \frac{X}{Q}\right)_s + \sum_i S\beta_i \left(Q_i * \frac{X}{Q}\right)_v$$

where D_β = noble gas beta dose to skin (mrem)

$S\beta_i$ = factor converting time integrated ground level concentration of noble gas to skin dose from beta radiation $\left(\frac{\text{mrem}}{\mu\text{Ci}\ \frac{\text{sec}}{\text{m}^3}}\right)$

When the skin dose due to noble gas beta radiation is computed as required by Specification 4.16.1, the receptor selected is the nearby resident exposed to maximal ground-level concentrations (maximum X/Q).

The total dose to the skin from noble gases is approximately equal to the beta radiation dose to the skin plus the gamma radiation dose to the total body.

3.9 Projected Doses due to Gaseous Effluent

Technical Specification 4.15.5.1 requires doses due to radioactive material released in gaseous effluent to be projected over a quarter at least once a month in order to guide plant personnel in operating the radwaste systems. This requirement is satisfied by calculating doses according to equations for

1. dose to air offsite due to noble gas gamma radiation as in § 3.5
2. dose to air offsite due to noble gas beta radiation as in § 3.6
3. total body dose due to noble gas gamma radiation as in § 4.3.1
4. skin dose due to noble gas beta radiation as in § 4.3.2, and
5. total body and maximally exposed organ doses due to gaseous effluents* other than noble gases as in § 3.7.

The projected doses are calculated on the basis of gaseous effluents from the Station during the preceeding three months. The radioactive releases are measured according to Technical Specification Table 4.15-2 and/or derived as outlined in ODAM sections 3.5 and 3.7.

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*radioactive iodine, radioactive material in particulate form, and radionuclides with half-lives greater than 8 days.

4.0 Dose Commitment from Releases over Extended Time

4.1 Releases during a Quarter

Technical Specification 6.11.1.e requires an assessment of radiation doses arising from liquid and gaseous effluents from the Station during each calendar quarter. The assessment includes the following calculations of dose as described by equations for

1. total body and maximally exposed organ doses due to liquid effluent via drinking water and eating fish from the River as in § 2.6
2. total body dose due to noble gas γ as in § 4.3.1
3. skin dose due to noble gas β as in § 4.3.2
4. total body and maximally exposed organ doses due to gaseous effluents* other than noble gases as in § 3.7
5. doses to air offsite due to noble gas γ as in § 3.5 and due to noble gas β as in § 3.6.

The dose calculations are based on liquid and gaseous effluents from the Station during each calendar quarter determined in accord with Technical Specification Tables 4.14-2 and 4.15-2.

Aqueous concentration is estimated according to § 2.2 on the basis of quarterly averaged stream flow. Quarterly averaged meteorological conditions concurrent with the quarterly gaseous release being evaluated are used to estimate atmospheric dispersion and deposition.

The receptor of the dose is described such that the dose to any resident near the Station is unlikely to be underestimated. That is, the receptor is selected on the basis of the combination of applicable pathways of exposure to gaseous effluent identified in the annual land use census and maximum ground level X/Q at the residence. Conditions (i.e. location, X/Q, and/or pathways) more conservative (i.e. expected to yield higher calculated doses) than appropriate for the maximally exposed individual may be assumed in the dose assessment.

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*Radioactive iodine, radioactive material in particulate form, and radionuclides with half-lives greater than 8 days.

Seasonal appropriateness of exposure pathways may be considered. Exposure by eating fresh vegetation or drinking milk from cows or goats fed fresh forage is an inappropriate assumption during the first or fourth calendar quarter; rather consumption of stored vegetation and stored forage is assumed during those quarters. Otherwise, during the second and third calendar quarters, exposure by eating fresh vegetation and/or drinking milk from cows or goats fed fresh forage is assumed where those pathways exist.

Factors converting stack-released noble gas to gamma radiation dose from the overhead plume are calculated on the basis of quarterly averaged meteorological data for the receptor location. Other environmental pathway-to-dose transfer factors used in the dose calculations are provided in Appendix A.

4.2 Releases during 12 Months

The regulation governing the maximum allowable dose or dose commitment to a member of the public from all uranium fuel cycle sources of radiation and radioactive material in the environment is stated in 40 CFR Part 190. It requires that the dose or dose commitment to a member of the public from all sources not exceed 25 mrem/yr to any organ or 75 mrem/yr to the thyroid. Technical Specification 4.16.1 requires calculation of the dose at least once every year to assess compliance with the regulation.

Fuel cycle sources or nuclear power reactors other than the Station itself do not measurably or significantly increase the radioactivity concentration in the vicinity of the Station; therefore, only radiation and radioactivity in the environment attributable to the Station itself are considered in the assessment of compliance with 40 CFR Part 190.

Contributions to the dose due to liquid and gaseous effluent are calculated as described by the equations for:

1. total body and maximally exposed organ doses due to liquid effluent via drinking water and eating fish from the River as in § 2.6
2. total body dose due to noble gas γ as in § 4.3.1

3. skin dose due to noble gas β as in § 4.3.2
4. total body and maximally exposed organ doses due to gaseous effluents* other than noble gases as in § 3.7.

The doses are calculated on the basis of liquid and gaseous effluents from the Station during 12 consecutive months, determined in accord with Technical Specification Tables 4.14-2 and 4.15-2. For the purpose of the Annual Radiological Environmental Report, doses are based upon release during a calendar year.

Aqueous radioactive material concentrations are estimated according to § 2.2 on the basis of annual averaged stream flow. Annual averaged meteorological conditions concurrent with gaseous releases being evaluated used to estimate atmospheric dispersion, deposition, and elevated plume gamma exposure.

The receptor of the dose is described such that the dose to any resident near the Station is not likely to be underestimated. The receptor is selected on the basis of the combination of applicable pathways of exposure to gaseous effluent identified in the annual land use census and maximum ground level X/Q at the residence. Conditions more conservative than appropriate for the maximally exposed person may be assumed in the dose assessment.

Factors converting stack-released noble gas to gamma radiation dose from the overhead plume are calculated on the basis of annual averaged meteorological data for the receptor location. Other environmental pathway-to-dose transfer factors used in the dose calculations appear in Appendix A.

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* Radioactive iodine, radioactive material in particulate form and radionuclides with half-lives greater than 8 days.

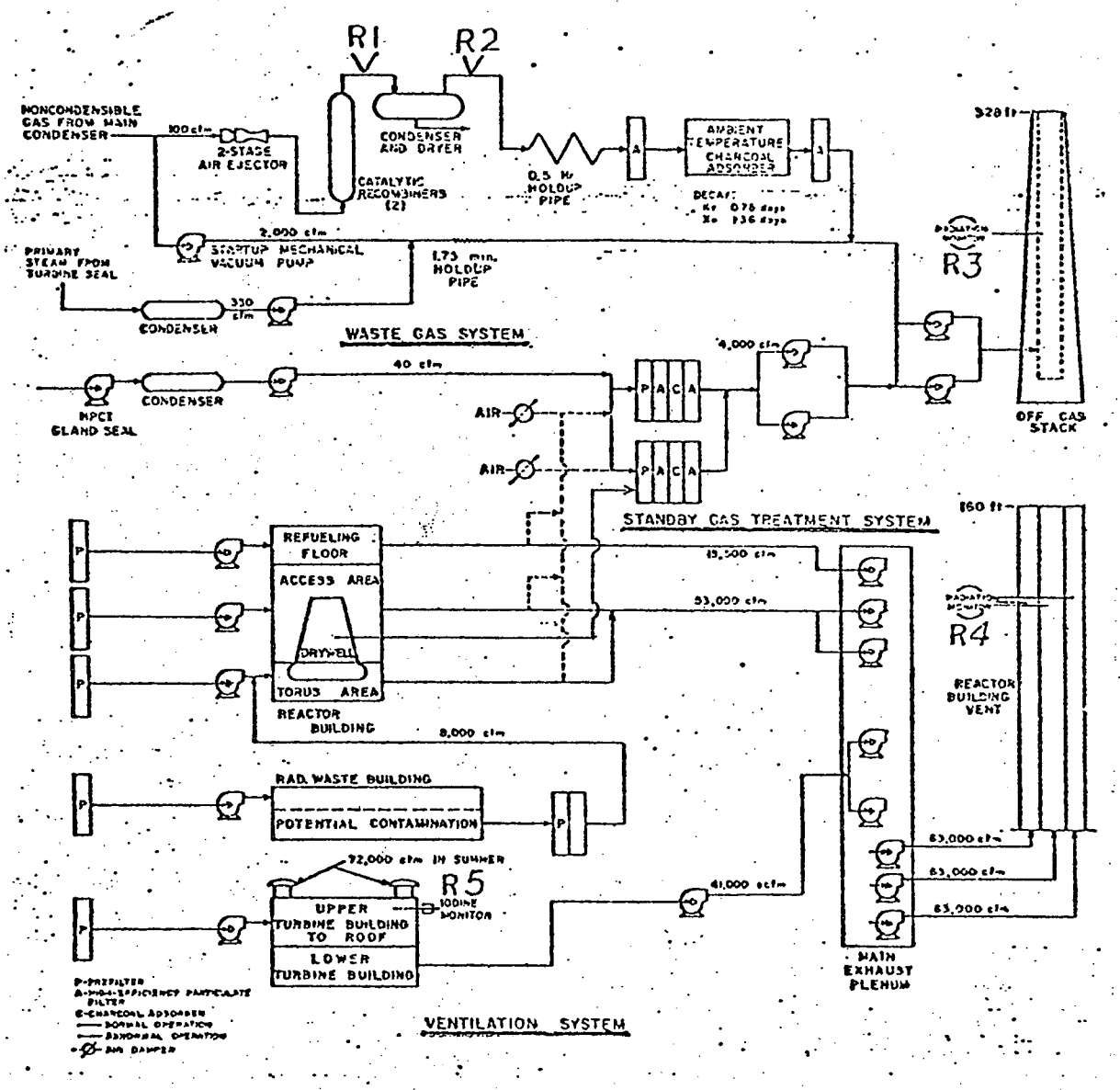

Figure 3-1 Gaseous Radioactive Waste Flow Diagram

R1 Main Condenser SJAE Offgas Pretreatment Noble Gas Activity Monitor

R2 Main Condenser SJAE Offgas Hydrogen Monitor

R3 Offgas Stack Radiation Monitoring System

R4 Reactor Building Exhaust Vent Monitoring System

R5 Upper Turbine Building Exhaust Vent Sampling System

Figure 3-2

Map of area around DAEC within about 5 miles of the Station.

Station and site boundary should be identified.

Residence within about 2 miles should be identified if information is available.

Will identify locations at which doses are calculated.

a) noble gas gamma and beta doses to air at 1260 meters NNW

Table 3-1

Atmospheric Gaseous Release Points
at the Duane Arnold Energy Center

Parameter	Release Point		
	Offgas Stack	Reactor Bldg Vent	Turbine Bldg Vent
Release Height	328 ft	154 ft	60 ft
Release Mode	elevated	wake-split	wake-split
Effluent Source	Waste Gas System Standby Gas Treatment System	Reactor Bldg Radwaste Bldg Lower Turbine Bldg	Upper Turbine Bldg

Table 3-2

Computed Releases of Radioactive Noble Gases in Gaseous Effluent from Duane Arnold Energy Center

Nuclide	Stack Release		Plant Vents Release	
	(Ci/yr)[a]	fraction[b]	(Ci/yr)[a]	fraction[b]
Kr-83m	4.90E+01	2.53E-03	0	0
Kr-85m	2.34E+03	1.21E-01	7.40E+01	1.98E-02
Kr-85	1.40E+02	7.23E-03	0	0
Kr-87	1.56E+02	8.06E-03	1.36E+02	3.64E-02
Kr-88	1.65E+03	8.52E-02	2.36E+02	6.32E-02
Kr-89	6.40E+02	3.31E-02	0	0
Xe-131m	4.80E+01	2.48E-03	0	0
Xe-133m	3.50E+01	1.81E-03	0	0
Xe-133	1.24E+04	6.41E-01	3.92E+02	1.05E-01
Xe-135m	1.80E+01	9.30E-04	7.42E+02	1.99E-01
Xe-135	5.10E+02	2.63E-02	7.43E+02	1.99E-01
Xe-137	7.80E+02	4.03E-02	0	0
Xe-138	5.90E+02	3.05E-02	1.41E+03	3.78E-01
	19356.	1.0	3733.	1.0

a Releases computed by BWR-GALE for DAEC Base Case gaseous radwaste treatment. Computed releases are included only to show the basis of the radionuclide distribution.

b This is the calculated distribution of radionuclides in gaseous effluents in each release pathway. To estimate radionuclide concentrations in a sample in which only the total activity concentration has been measured, multiply the total activity concentration by the fraction of respective radionuclides listed above.

Table 3-3

Transfer Factors for Maximum Offsite Air Dose
Based on Reference Meteorology

Radionuclide	Air Dose Transfer Factors		
	$A\gamma_{s_i}$ [a,b] $\left(\frac{mrad}{\mu Ci}\right)$	$A\gamma_{v_i}$ $\left(\frac{mrad}{\mu Ci\ sec/m^3}\right)$	$A\beta_i$ $\left(\frac{mrad}{\mu Ci\ sec/m^3}\right)$
Kr-83m	4.3E-14	6.1E-7	9.1E-6
Kr-85m	6.0E-12	3.9E-5	6.2E-5
Kr-85	8.4E-14	5.4E-7	6.2E-5
Kr-87	2.3E-13	2.0E-4	3.3E-4
Kr-88	6.4E-11	4.8E-4	9.3E-5
Kr-89	3.0E-11	5.5E-4	3.4E-4
Kr-90	—	5.2E-4	2.5E-4
Xe-131m	1.8E-14	4.9E-6	3.5E-5
Xe-133m	1.4E-14	1.0E-5	4.7E-5
Xe-133	1.5E-12	1.1E-5	3.3E-5
Xe-135m	1.1E-11	1.1E-4	2.3E-5
Xe-135	9.5E-12	6.1E-5	7.8E-5
Xe-137	2.6E-12	4.8E-5	4.0E-4
Xe-138	3.6E-11	2.9E-4	1.5E-4
Ar-41	4.4E-11	2.9E-4	1.0E-4

[a] Based on reference meteorology at DAEC

[b] Receptor located 1260 meters NNW of Station

APPENDIX A

PATHWAY-DOSE TRANSFER FACTORS

Environmental pathway transfer factors, usage factors, and dose commitment factors appropriate for each exposure pathway, age, and organ are combined into integrated environmental concentration-to-dose factors for each radionuclide. This appendix includes tables of values of the transfer factors calculated in accord with equations and values recommended in Regulatory Guide 1.109, Revision 0. Appropriate transfer factors from Appendix A are used in performing dose assessment calculations prescribed in the ODAM.

The transfer factors have been tabulated for individual environmental pathways. In the event a single, composite transfer factor is desired for a given organ and age group, it can be obtained by summing the factors for appropriate pathways.

DOSE FACTORS FOR LIQUID DISCHARGES BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE IN DISCHARGE FLOW OF 1 GPM WITH NO ADDITIONAL DILUTION

PATHWAY - POTABLE WATER AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	4.92E+01	4.92E+01	4.92E+01	4.92E+01	4.92E+01	0.	4.92E+01
P---32	6.91E+04	4.33E+03	0.	0.	0.	7.77E+03	0.	2.08E+03
CR--51	0.	0.	5.76E-01	2.13E-01	1.28E+00	2.42E+02	0.	9.64E-01
MN--54	0.	1.68E+03	0.	4.98E+02	0.	5.13E+03	0.	3.20E+02
FE--55	2.27E+03	1.02E+04	0.	0.	1.19E+04	4.00E+03	0.	2.69E+03
FE--59	1.58E+03	3.75E+03	0.	0.	1.04E+03	1.24E+04	0.	1.43E+03
CO--58	0.	2.72E+02	0.	0.	0.	5.51E+03	0.	6.10E+02
CO--60	0.	7.89E+02	0.	0.	0.	1.48E+04	0.	1.73E+03
ZN--65	1.78E+03	5.64E+03	0.	3.77E+03	0.	3.55E+03	0.	2.95E+03
RB--86	0.	7.60E+03	0.	0.	0.	1.50E+03	0.	3.54E+03
SR--89	1.13E+05	0.	0.	0.	0.	1.80E+04	0.	3.23E+03
SR--90	2.79E+06	0.	0.	0.	0.	4.20E+04	0.	6.82E+05
Y---91	5.14E+01	0.	0.	0.	0.	2.83E+04	0.	1.38E+00
ZR--95	1.11E+01	3.57E+00	0.	5.63E+00	0.	1.12E+04	0.	2.41E+00
ZR--97	3.91E-01	7.95E-02	0.	1.19E-01	0.	2.36E+04	0.	3.65E-02
NB--95	2.26E+00	1.26E+00	0.	1.25E+00	0.	7.63E+03	0.	4.94E-01
MO--99	5.67E-02	1.40E+03	0.	3.17E+03	7.86E-02	3.33E+03	0.	2.68E+02
RU-103	6.73E+01	0.	0.	2.57E+02	0.	7.86E+03	0.	2.90E+01
RU-106	1.01E+03	0.	0.	1.95E+03	0.	6.53E+04	0.	1.28E+02
AG110M	5.86E+01	5.42E+01	0.	1.07E+02	0.	2.21E+04	0.	3.22E+01
SB-124	1.03E+03	1.93E+01	2.48E+00	0.	7.95E+02	2.90E+04	0.	4.05E+02
SB-125	8.19E+02	9.25E+00	1.10E+00	5.00E+00	8.55E+04	7.23E+03	0.	1.04E+02
TE125M	9.77E+02	3.55E+02	2.94E+02	3.98E+03	0.	3.90E+03	0.	1.31E+02
TE127M	2.50E+03	8.75E+02	6.50E+02	1.02E+04	0.	1.02E+04	0.	3.07E+02
TE129M	4.19E+03	1.56E+03	1.45E+03	1.74E+04	0.	2.10E+04	0.	6.64E+02
TE131M	5.34E+02	3.13E+02	2.64E+04	2.50E+03	0.	2.31E+04	0.	2.40E+02
TE-132	8.41E+03	7.20E+02	2.42E+04	5.50E+03	0.	2.54E+04	0.	5.69E+02
I--131	1.46E+03	2.10E+03	6.85E+05	3.59E+03	0.	5.52E+02	0.	1.20E+03
I--133	3.53E+02	6.12E+02	1.18E+05	1.07E+03	0.	5.30E+02	0.	1.87E+02
CS-134	2.28E+04	5.43E+04	0.	1.76E+04	5.83E+03	9.50E+02	0.	4.44E+04
CS-136	2.33E+03	9.18E+03	0.	5.11E+03	7.00E+02	1.04E+03	0.	6.61E+03
CS-137	2.93E+04	4.00E+04	0.	1.36E+04	4.51E+03	7.71E+02	0.	2.62E+04
BA-140	7.25E+03	9.20E+00	0.	3.10E+00	5.21E+00	2.12E+04	0.	4.79E+02
LA-140	7.46E-01	3.76E-01	0.	0.	0.	2.76E+04	0.	9.96E-02
CE-141	3.40E+00	2.30E+00	0.	1.07E+00	0.	8.79E+03	0.	2.61E-01
CE-143	5.46E-01	3.40E+02	0.	1.70E-01	0.	1.33E+04	0.	4.22E-02
CE-144	1.79E+02	7.48E+01	0.	4.43E+01	0.	6.05E+04	0.	9.60E+00
NP-239	3.90E-01	3.88E-02	0.	1.17E-01	0.	7.60E+03	0.	2.07E-02

DOSE FACTORS FOR LIQUID DISCHARGES BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE IN DISCHARGE FLOW OF 1 GPM WITH NO ADDITIONAL DILUTION

PATHWAY - FRESH WATER FISH

AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.27E+00	1.27E+00	1.27E+00	1.27E+00	1.27E+00	0.	1.27E+00
P---32	1.94E+08	1.22E+07	0.	0.	0.	2.18E+07	0.	7.51E+06
CR--51	0.	0.	3.27E+00	1.21E+00	7.27E+00	1.38E+03	0.	5.48E+00
MN--54	0.	1.93E+04	0.	5.73E+03	0.	5.90E+04	0.	3.66E+03
FE--55	6.54E+03	2.94E+04	0.	0.	3.41E+04	1.15E+04	0.	7.73E+03
FE--59	4.51E+03	1.07E+04	0.	0.	2.97E+03	3.53E+04	0.	4.07E+03
CO--58	0.	3.90E+02	0.	0.	0.	7.89E+03	0.	8.73E+02
CO--60	0.	1.13E+03	0.	0.	0.	2.12E+04	0.	2.49E+03
ZN--65	1.02E+05	3.24E+05	0.	2.17E+05	0.	2.04E+05	0.	1.47E+05
RB--86	0.	4.29E+05	0.	0.	0.	8.46E+04	0.	2.00E+05
SR--89	9.65E+04	0.	0.	0.	0.	1.54E+04	0.	2.76E+03
SR--90	2.41E+06	0.	0.	0.	0.	3.84E+04	0.	5.89E+05
Y---91	3.68E+01	0.	0.	0.	0.	2.02E+04	0.	9.80E-01
ZR--95	3.89E+01	2.13E+01	0.	2.13E+01	0.	1.28E+05	0.	8.48E+00
ZR--97	6.72E+00	1.69E+00	0.	1.98E+00	0.	7.62E+03	0.	6.20E-01
NB--95	1.93E+03	1.07E+03	0.	1.07E+03	0.	6.52E+06	0.	4.22E+02
MO--99	2.77E-02	3.55E+02	0.	8.06E+02	3.84E-02	8.69E+02	0.	5.85E+01
RU-103	1.92E+01	0.	0.	7.33E+01	0.	2.24E+03	0.	8.28E+00
RU-106	2.90E+02	0.	0.	5.61E+02	0.	1.88E+04	0.	3.67E+01
AG110M	3.87E+00	3.58E+00	0.	7.05E+00	0.	1.46E+03	0.	2.13E+00
SB-124	2.93E+01	5.53E-01	7.09E-02	0.	2.28E+01	8.30E+02	0.	1.16E+01
SB-125	5.17E+01	1.05E+01	8.52E+00	1.15E+02	2.46E+03	3.21E+02	0.	8.51E+00
TE125M	1.12E+04	4.06E+03	3.37E+03	4.55E+04	0.	4.46E+04	0.	1.50E+03
TE127M	2.88E+04	1.01E+04	7.54E+03	1.17E+05	0.	1.25E+05	0.	3.54E+03
TE129M	4.77E+04	1.78E+04	1.64E+04	2.00E+05	0.	2.40E+05	0.	7.50E+03
TE131M	4.17E+03	2.07E+03	2.24E+04	2.04E+04	0.	1.99E+05	0.	1.71E+03
TE-132	8.63E+04	5.66E+03	1.56E+04	5.40E+04	0.	2.63E+05	0.	5.25E+03
I--131	6.04E+02	8.66E+02	2.83E+05	1.48E+03	0.	2.28E+02	0.	4.95E+02
I--133	1.03E+02	1.78E+02	3.42E+04	3.11E+02	0.	1.56E+02	0.	5.43E+01
CS-134	1.31E+06	3.12E+06	0.	1.01E+05	3.35E+05	5.46E+04	0.	2.55E+05
CS-135	1.30E+05	5.14E+05	0.	2.06E+05	3.92E+04	5.84E+04	0.	3.70E+05
CS-137	1.68E+06	2.30E+06	0.	7.83E+05	2.60E+05	4.43E+04	0.	1.51E+05
BA-140	8.12E+02	1.13E+00	0.	3.47E-01	5.84E-01	9.71E+03	0.	5.35E+01
LA-140	4.36E-01	2.20E-01	0.	0.	0.	1.61E+04	0.	5.85E-02
CE-141	9.68E-02	6.55E-02	0.	3.04E-02	0.	2.50E+02	0.	7.42E-03
CE-143	1.05E-01	7.82E+00	0.	2.51E-02	0.	7.02E+02	0.	5.52E-03
CE-144	5.16E+00	2.15E+00	0.	1.27E+00	0.	1.74E+03	0.	2.70E-01
NP-239	9.02E-02	9.53E-03	0.	2.89E-02	0.	1.09E+03	0.	5.13E-03

DOSE FACTORS FOR LIQUID DISCHARGES BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE IN DISCHARGE FLOW OF 1 GPM WITH NO ADDITIONAL DILUTION

PATHWAY - POTABLE WATER

AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	2.72E+01	2.72E+01	3.44E+01	2.72E+01	2.72E+01	0.	2.72E+01
P---32	4.83E+04	3.03E+03	0.	0.	0.	5.43E+03	0.	1.87E+03
CR--51	0.	0.	4.03E-01	1.49E-01	8.94E-01	1.69E+02	0.	5.73E-01
MN--54	0.	1.17E+03	0.	3.48E+02	0.	3.59E+03	0.	2.24E+02
FE--55	1.59E+03	7.15E+03	0.	0.	8.28E+03	2.79E+03	0.	1.88E+03
FE--59	1.10E+03	2.62E+03	0.	0.	7.28E+02	8.65E+03	0.	9.97E+02
CO--58	0.	2.53E+02	0.	0.	0.	3.42E+03	0.	5.77E+02
CO--60	0.	7.07E+02	0.	0.	0.	8.48E+03	0.	1.62E+03
ZN--65	1.24E+03	3.94E+03	0.	2.64E+03	0.	2.48E+03	0.	1.78E+03
RB--86	0.	5.31E+03	0.	0.	0.	1.05E+03	0.	2.48E+03
SR--89	1.17E+05	0.	0.	0.	0.	1.27E+04	0.	3.35E+03
SR--90	2.67E+06	0.	0.	0.	1.17E+03	5.98E+04	0.	6.59E+05
Y---91	5.00E+01	0.	0.	0.	0.	1.92E+04	0.	1.33E+00
ZR--95	9.51E+00	3.17E+00	0.	3.94E+00	0.	6.87E+03	0.	2.22E+00
ZR--97	2.73E-01	5.55E-02	0.	8.31E-02	0.	1.65E+04	0.	2.53E-02
NB--95	1.84E+00	1.11E+00	0.	8.71E-01	0.	4.52E+03	0.	6.24E-01
MO--99	3.96E-02	9.76E+02	0.	2.21E+03	5.49E-02	2.33E+03	0.	1.87E+02
RU-103	5.02E+01	0.	0.	1.80E+02	0.	4.70E+03	0.	2.69E+01
RU-106	1.02E+03	0.	0.	1.35E+03	0.	4.64E+04	0.	1.29E+02
AG110M	4.10E+01	3.79E+01	0.	7.45E+01	0.	1.55E+04	0.	2.25E+01
SB-124	7.16E+02	1.35E+01	1.73E+00	0.	5.56E+02	2.03E+04	0.	2.83E+02
SB-125	5.72E+02	6.59E+00	8.53E-01	3.50E+00	5.97E+04	5.05E+03	0.	1.15E+02
TE125M	9.76E+02	3.49E+02	2.75E+02	2.78E+03	0.	2.73E+03	0.	1.29E+02
TE127M	1.75E+03	6.14E+02	4.57E+02	7.10E+03	0.	7.62E+03	0.	2.10E+02
TE129M	4.22E+03	1.56E+03	1.36E+03	1.22E+04	0.	1.47E+04	0.	5.64E+02
TE131M	3.87E+02	2.37E+02	2.14E+04	1.75E+03	0.	1.01E+04	0.	1.80E+02
TE-132	8.05E+02	5.37E+02	1.70E+04	3.84E+03	0.	1.84E+04	0.	5.29E+02
I--131	1.37E+03	1.93E+03	5.57E+05	2.50E+03	0.	3.06E+02	0.	1.15E+03
I--133	3.50E+02	5.93E+02	1.08E+05	7.47E+02	0.	4.31E+02	0.	1.83E+02
CS-134	2.06E+04	4.97E+04	0.	1.23E+04	6.02E+03	5.74E+02	0.	2.32E+04
CS-136	1.03E+03	6.41E+03	0.	3.57E+03	4.89E+02	7.29E+02	0.	4.62E+03
CS-137	2.74E+04	3.09E+04	0.	9.51E+03	4.90E+03	4.92E+02	0.	1.29E+04
BA-140	7.05E+03	8.76E+00	0.	2.17E+00	5.81E+00	5.51E+03	0.	4.54E+02
LA-140	7.25E-01	3.59E-01	0.	0.	0.	1.98E+04	0.	9.48E-02
CE-141	3.20E+00	2.15E+00	0.	7.40E-01	0.	5.81E+03	0.	2.40E-01
CE-143	3.81E-01	2.43E+02	0.	1.19E-01	0.	9.31E+03	0.	2.95E-02
CE-144	1.85E+02	7.58E+01	0.	3.10E+01	0.	4.35E+04	0.	9.81E+00
NP-239	2.74E-01	2.73E-02	0.	8.14E-02	0.	5.31E+03	0.	1.45E-02

DOSE FACTORS FOR LIQUID DISCHARGES BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE IN DISCHARGE FLOW OF 1 GPM WITH NO ADDITIONAL DILUTION

PATHWAY - FRESH WATER FISH

AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	7.67E-01	7.67E-01	9.70E-01	7.67E-01	7.67E-01	0.	7.67E-01
P---32	1.48E+08	9.27E+06	0.	0.	0.	1.60E+07	0.	5.72E+05
CR--51	0.	0.	2.49E+00	9.21E-01	5.54E+00	1.05E+03	0.	4.17E+00
MN--54	0.	1.47E+04	0.	4.37E+03	0.	4.49E+04	0.	2.80E+03
FE--55	4.98E+03	2.24E+04	0.	0.	2.60E+04	8.76E+03	0.	5.89E+03
FE--59	3.44E+03	8.16E+03	0.	0.	2.27E+03	2.69E+04	0.	3.10E+03
CO--58	0.	3.95E+02	0.	0.	0.	5.34E+03	0.	9.00E+02
CO--60	0.	1.11E+03	0.	0.	0.	1.33E+04	0.	2.53E+03
ZN--65	7.78E+04	2.47E+05	0.	1.65E+05	0.	1.56E+05	0.	1.12E+05
RB--86	0.	3.27E+05	0.	0.	0.	6.45E+04	0.	1.53E+05
SR--89	1.10E+05	0.	0.	0.	0.	1.19E+04	0.	3.14E+03
SR--90	2.51E+06	0.	0.	0.	1.72E+03	5.81E+04	0.	8.20E+05
Y---91	3.89E+01	0.	0.	0.	0.	1.50E+04	0.	1.04E+00
ZR--95	3.45E+01	2.04E+01	0.	1.63E+01	0.	8.29E+04	0.	1.10E+01
ZR--97	5.13E+00	1.29E+00	0.	1.51E+00	0.	5.81E+03	0.	4.73E-01
NB--95	1.71E+03	1.03E+03	0.	8.11E+02	0.	4.21E+06	0.	5.82E+02
MO--99	2.11E-02	2.70E+02	0.	6.14E+02	2.93E-02	6.62E+02	0.	5.22E+01
RU-103	1.87E+01	0.	0.	5.59E+01	0.	1.46E+03	0.	8.38E+00
RU-106	3.21E+02	0.	0.	4.27E+02	0.	1.45E+04	0.	4.04E+01
AG110M	2.95E+00	2.73E+00	0.	5.37E+00	0.	1.11E+03	0.	1.62E+00
SB-124	2.23E+01	4.21E-01	5.40E-02	0.	1.73E+01	6.32E+02	0.	8.82E+00
SB-125	4.86E+01	1.12E+01	8.68E+00	8.74E+01	1.87E+03	2.44E+02	0.	7.68E+00
TE125M	1.22E+04	4.36E+03	3.43E+03	3.47E+04	0.	3.40E+04	0.	1.62E+03
TE127M	2.21E+04	7.71E+03	5.80E+03	8.91E+04	0.	1.05E+05	0.	2.72E+03
TE129M	5.24E+04	1.94E+04	1.68E+04	1.51E+05	0.	1.83E+05	0.	8.25E+03
TE131M	3.19E+03	1.59E+03	1.94E+04	1.56E+04	0.	1.52E+05	0.	1.32E+03
TE-132	9.25E+03	5.82E+03	1.33E+04	4.12E+04	0.	2.08E+05	0.	5.48E+03
I--131	6.17E+02	8.71E+02	2.51E+05	1.13E+03	0.	1.65E+02	0.	5.19E+02
I--133	1.11E+02	1.88E+02	3.41E+04	2.37E+02	0.	1.37E+02	0.	5.79E+01
CS-134	1.29E+06	3.12E+06	0.	7.71E+05	3.78E+05	3.60E+04	0.	1.40E+05
CS-136	9.93E+04	3.92E+05	0.	2.18E+05	2.99E+04	4.45E+04	0.	2.82E+05
CS-137	1.72E+06	2.32E+05	0.	5.97E+05	3.07E+05	3.09E+04	0.	8.12E+05
BA-140	8.62E+02	1.17E+00	0.	2.65E-01	7.10E-01	6.41E+03	0.	5.55E+01
LA-140	4.63E-01	2.29E-01	0.	0.	0.	1.20E+04	0.	6.05E-02
CE-141	9.92E-02	6.06E-02	0.	2.31E-02	0.	1.80E+02	0.	7.64E-03
CE-143	7.96E-02	5.96E+00	0.	1.92E-02	0.	5.35E+02	0.	4.21E-03
CE-144	5.80E+00	2.38E+00	0.	9.72E-01	0.	1.36E+03	0.	3.07E-01
NP-239	7.37E-02	7.32E-03	0.	2.21E-02	0.	1.44E+03	0.	3.91E-03

DOSE FACTORS FOR LIQUID DISCHARGES BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE IN DISCHARGE FLOW OF 1 GPM WITH NO ADDITIONAL DILUTION

PATHWAY - POTABLE WATER AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	5.20E+01	5.20E+01	3.44E+01	5.20E+01	5.20E+01	0.	5.20E+01
P---32	4.83E+04	3.03E+03	0.	0.	0.	5.43E+03	0.	1.87E+03
CR--51	0.	0.	4.03E-01	1.49E-01	8.94E-01	1.69E+02	0.	6.73E-01
MN--54	0.	1.17E+03	0.	3.48E+02	0.	3.59E+03	0.	2.24E+02
FE--55	1.59E+03	7.15E+03	0.	0.	8.28E+03	2.79E+03	0.	1.88E+03
FE--59	1.10E+03	2.62E+03	0.	0.	7.28E+02	8.65E+03	0.	9.97E+02
CO--58	0.	4.72E+02	0.	0.	0.	2.81E+03	0.	1.42E+03
CO--60	0.	1.33E+03	0.	0.	0.	7.33E+03	0.	3.97E+03
ZN--65	1.24E+03	3.94E+03	0.	2.64E+03	0.	2.48E+03	0.	1.78E+03
RB--86	0.	5.31E+03	0.	0.	0.	1.05E+03	0.	2.48E+03
SR--89	3.51E+05	0.	0.	0.	0.	1.31E+04	0.	1.01E+04
SR--90	4.41E+06	0.	0.	0.	0.	6.24E+04	0.	1.12E+06
Y---91	1.49E+02	0.	0.	0.	0.	1.98E+04	0.	3.98E+00
ZR--95	2.65E+01	6.19E+00	0.	3.94E+00	0.	6.41E+03	0.	5.63E+00
ZR--97	2.73E-01	5.55E-02	0.	8.31E-02	0.	1.65E+04	0.	2.55E-02
NB--95	4.95E+00	2.11E+00	0.	8.71E-01	0.	3.66E+03	0.	1.55E+00
MO--99	3.96E-02	9.76E+02	0.	2.21E+03	5.49E-02	2.33E+03	0.	1.87E+02
RU-103	1.72E+02	0.	0.	1.80E+02	0.	4.52E+03	0.	6.96E+01
RU-105	3.05E+03	0.	0.	1.36E+03	0.	4.74E+04	0.	3.79E+02
AG110M	4.10E+01	3.79E+01	0.	7.45E+01	0.	1.55E+04	0.	2.25E+01
SB-124	7.16E+02	1.35E+01	1.73E+00	0.	5.50E+02	2.03E+04	0.	2.83E+02
SB-125	5.75E+02	7.14E+00	1.54E+00	3.50E+00	5.97E+04	5.05E+03	0.	1.15E+02
TE125M	2.91E+03	7.87E+02	8.15E+02	2.78E+03	0.	2.80E+03	0.	3.87E+02
TE127M	1.80E+03	6.24E+02	4.88E+02	7.10E+03	0.	8.66E+03	0.	2.25E+02
TE129M	1.26E+04	3.50E+03	4.02E+03	1.22E+04	0.	1.51E+04	0.	1.94E+03
TE131M	4.87E+02	3.18E+02	5.08E+04	1.73E+03	0.	1.61E+04	0.	2.53E+02
TE-132	2.40E+03	1.17E+03	1.80E+04	3.84E+03	0.	1.82E+04	0.	1.29E+03
I--131	4.00E+03	4.10E+03	1.33E+06	2.50E+03	0.	3.51E+02	0.	3.09E+03
I--133	1.03E+03	1.27E+03	3.07E+05	7.47E+02	0.	5.16E+02	0.	5.00E+02
CS-134	5.74E+04	9.66E+04	0.	1.23E+04	1.07E+04	5.23E+02	0.	2.06E+04
CS-135	1.63E+03	6.41E+03	0.	3.57E+03	4.83E+02	7.29E+02	0.	4.02E+03
CS-137	8.00E+04	7.74E+04	0.	9.51E+03	9.07E+03	4.72E+02	0.	1.15E+04
BA-140	2.06E+04	1.83E+01	0.	2.17E+00	1.08E+01	5.78E+03	0.	1.21E+03
LA-140	2.11E+00	7.34E-01	0.	0.	0.	2.08E+04	0.	2.48E-01
CE-141	9.54E+00	4.77E+00	0.	7.45E-01	0.	5.99E+03	0.	7.10E-01
CE-143	3.81E-01	2.43E+02	0.	1.19E-01	0.	9.31E+03	0.	2.95E-02
CE-144	5.48E+02	1.72E+02	0.	3.10E+01	0.	4.46E+04	0.	2.92E+01
NP-239	2.77E-01	2.76E-02	0.	8.14E-02	0.	5.31E+03	0.	1.40E-02

DOSE FACTORS FOR LIQUID DISCHARGES BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE IN DISCHARGE FLOW OF 1 GPM WITH NO ADDITIONAL DILUTION

PATHWAY - FRESH WATER FISH

AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	6.34E-01	6.34E-01	4.18E-01	6.34E-01	6.34E-01	0.	6.34E-01
P---32	6.38E+07	4.00E+06	0.	0.	0.	7.17E+06	0.	2.47E+05
CR--51	0.	0.	1.08E+00	3.97E-01	2.39E+00	4.53E+02	0.	1.80E+00
MN--54	0.	6.33E+03	0.	1.88E+03	0.	1.94E+04	0.	1.21E+03
FE--55	2.15E+03	9.67E+03	0.	0.	1.12E+04	3.78E+03	0.	2.54E+03
FE--59	1.48E+03	3.52E+03	0.	0.	9.77E+02	1.16E+04	0.	1.34E+03
CO--58	0.	3.18E+02	0.	0.	0.	1.89E+03	0.	9.50E+02
CO--60	0.	8.96E+02	0.	0.	0.	4.96E+03	0.	2.69E+03
ZN--65	3.35E+04	1.07E+05	0.	7.12E+04	0.	6.71E+04	0.	4.82E+04
RB--86	0.	1.41E+05	0.	0.	0.	2.78E+04	0.	6.50E+04
SR--89	1.42E+05	0.	0.	0.	0.	5.29E+03	0.	4.05E+03
SR--90	1.79E+06	0.	0.	0.	0.	2.62E+04	0.	4.54E+05
Y---91	5.01E+01	0.	0.	0.	0.	6.66E+03	0.	1.34E+00
ZR--95	4.01E+01	1.69E+01	0.	7.00E+00	0.	2.90E+04	0.	1.24E+01
ZR--97	2.21E+00	5.57E-01	0.	6.51E-01	0.	2.50E+03	0.	2.04E-01
NB--95	1.99E+03	8.49E+02	0.	3.50E+02	0.	1.47E+06	0.	6.23E+02
MO--99	9.12E-03	1.17E+02	0.	2.64E+02	1.25E-02	2.85E+02	0.	2.25E+01
RU-103	2.31E+01	0.	0.	2.41E+01	0.	5.07E+02	0.	9.34E+00
RU-106	4.12E+02	0.	0.	1.84E+02	0.	6.40E+03	0.	5.12E+01
AG110M	1.27E+00	1.18E+00	0.	2.32E+00	0.	4.81E+02	0.	7.00E-01
SB-124	9.63E+00	1.82E-01	2.33E-02	0.	7.47E+00	2.73E+02	0.	3.81E+00
SB-125	4.71E+01	1.08E+01	1.11E+01	3.77E+01	8.08E+02	1.06E+02	0.	6.81E+00
TE125M	1.56E+04	4.24E+03	4.39E+03	1.49E+04	0.	1.51E+04	0.	2.08E+03
TE127M	9.85E+03	3.41E+03	2.73E+03	3.84E+04	0.	5.31E+04	0.	1.25E+03
TE129M	6.73E+04	1.88E+04	2.15E+04	6.54E+04	0.	8.10E+04	0.	1.04E+04
TE131M	1.42E+03	7.14E+02	1.86E+04	6.73E+03	0.	6.54E+04	0.	5.92E+02
TE-132	1.14E+04	5.06E+03	1.05E+04	1.77E+04	0.	8.84E+04	0.	6.09E+03
I--131	7.78E+02	7.97E+02	2.59E+05	4.87E+02	0.	6.83E+01	0.	6.01E+02
I--133	1.41E+02	1.74E+02	4.19E+04	1.02E+02	0.	7.04E+01	0.	6.83E+01
CS-134	1.55E+06	2.61E+06	0.	3.33E+05	2.90E+05	1.41E+04	0.	5.56E+05
CS-136	4.28E+04	1.69E+05	0.	9.40E+04	1.23E+04	1.92E+04	0.	1.22E+05
CS-137	2.16E+06	2.10E+06	0.	2.57E+05	2.40E+05	1.28E+04	0.	3.12E+05
BA-140	1.09E+03	1.05E+00	0.	1.14E-01	5.68E-01	2.92E+03	0.	6.37E+01
LA-140	5.79E-01	2.62E-01	0.	0.	0.	5.73E+03	0.	6.82E-02
CE-141	1.28E-01	6.38E-02	0.	9.98E-03	0.	8.01E+01	0.	9.51E-03
CE-143	3.44E-02	2.57E+00	0.	8.27E-03	0.	2.31E+02	0.	1.81E-03
CE-144	7.40E+00	2.32E+00	0.	4.20E-01	0.	6.02E+02	0.	3.94E-01
NP-239	3.21E-02	3.18E-03	0.	9.50E-03	0.	6.20E+02	0.	1.70E-03

DOSE FACTORS FOR LIQUID DISCHARGES BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE IN DISCHARGE FLOW OF 1 GPM WITH NO ADDITIONAL DILUTION

PATHWAY - POTABLE WATER

AGE GROUP - INFANT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	7.87E+01	7.87E+01	3.44E+01	7.87E+01	7.87E+01	0.	7.87E+01
P---32	4.83E+04	3.03E+03	0.	0.	0.	5.43E+03	0.	1.87E+03
CR--51	0.	0.	4.03E-01	1.49E-01	8.94E-01	1.69E+02	0.	6.73E-01
MN--54	0.	1.17E+03	0.	3.48E+02	0.	3.59E+03	0.	2.24E+02
FE--55	1.59E+03	7.15E+03	0.	0.	8.28E+03	2.79E+03	0.	1.88E+03
FE--59	1.10E+03	2.62E+03	0.	0.	7.28E+02	8.65E+03	0.	9.97E+02
CO--58	0.	9.64E+02	0.	0.	0.	2.50E+03	0.	2.30E+03
CO--60	0.	2.74E+03	0.	0.	0.	6.77E+03	0.	6.50E+03
ZN--65	1.24E+03	3.94E+03	0.	2.64E+03	0.	2.48E+03	0.	1.70E+03
RB--86	0.	5.31E+03	0.	0.	0.	1.05E+03	0.	2.48E+03
SR--89	7.46E+05	0.	0.	0.	0.	1.40E+04	0.	2.14E+04
SR--90	6.43E+06	0.	0.	0.	0.	6.63E+04	0.	1.64E+05
Y---91	3.19E+02	0.	0.	0.	0.	2.11E+04	0.	8.49E+03
ZR--95	5.39E+01	1.36E+01	0.	3.94E+00	0.	6.10E+03	0.	9.67E+00
ZR--97	2.73E-01	5.55E-02	0.	8.31E-02	0.	1.65E+04	0.	2.53E-02
NB--95	9.87E+00	4.44E+00	0.	8.71E-01	0.	3.55E+03	0.	2.61E+00
MO--99	3.96E-02	9.76E+02	0.	2.21E+03	5.49E-02	2.33E+03	0.	1.87E+02
RU-103	3.58E+02	0.	0.	1.80E+02	0.	4.47E+03	0.	1.23E+02
RU-106	6.51E+03	0.	0.	1.35E+03	0.	5.05E+04	0.	7.99E+02
AG110M	4.10E+01	3.79E+01	0.	7.45E+01	0.	1.55E+04	0.	2.29E+01
SB-124	7.16E+02	1.35E+01	1.73E+00	0.	5.56E+02	2.03E+04	0.	2.83E+02
SB-125	5.79E+02	8.78E+00	3.08E+00	3.50E+00	5.97E+04	5.05E+03	0.	1.16E+02
TE125M	6.19E+03	2.09E+03	2.04E+03	2.78E+03	0.	2.98E+03	0.	8.26E+02
TE127M	1.87E+03	6.54E+02	5.58E+02	7.10E+03	0.	9.18E+03	0.	2.42E+02
TE129M	2.66E+04	9.16E+03	1.00E+04	1.22E+04	0.	1.61E+04	0.	4.00E+03
TE131M	6.53E+02	5.41E+02	1.22E+05	1.75E+03	0.	1.61E+04	0.	3.57E+02
TE-132	4.96E+03	2.55E+03	2.01E+04	3.84E+03	0.	1.86E+04	0.	2.29E+03
I--131	8.40E+03	9.99E+03	3.22E+05	2.50E+03	0.	3.76E+02	0.	5.84E+03
I--133	2.17E+03	3.17E+03	7.50E+05	7.47E+02	0.	5.64E+02	0.	9.63E+02
CS-134	1.17E+05	2.11E+05	0.	1.23E+04	2.41E+04	5.02E+02	0.	1.79E+04
CS-136	1.63E+03	6.41E+03	0.	3.57E+03	4.89E+02	7.29E+02	0.	4.02E+03
CS-137	1.67E+05	1.87E+05	0.	9.51E+03	2.20E+04	4.85E+02	0.	1.08E+04
BA-140	4.34E+04	4.41E+01	0.	2.17E+00	2.67E+01	6.02E+03	0.	2.24E+03
LA-140	4.42E+00	1.74E+00	0.	0.	0.	2.17E+04	0.	4.50E-01
CE-141	2.03E+01	1.25E+01	0.	7.40E-01	0.	6.04E+03	0.	1.40E+00
CE-143	3.81E-01	2.43E+02	0.	1.19E-01	0.	9.31E+03	0.	2.99E-02
CE-144	1.15E+03	4.53E+02	0.	3.10E+01	0.	4.74E+04	0.	6.20E+01
NP-239	2.82E-01	2.82E-02	0.	8.14E-02	0.	5.31E+03	0.	1.47E-02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - INHALATION AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	0.	3.10E+01
C---14	5.28E+02	9.88E+01	9.88E+01	9.88E+01	9.88E+01	9.88E+01	0.	9.88E+01
P---32	3.82E+04	2.23E+03	0.	0.	0.	2.50E+03	0.	1.45E+03
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.15E+03	0.	2.85E+02	4.05E+04	2.24E+03	0.	1.82E+02
FE--59	3.40E+02	8.03E+05	0.	0.	2.94E+04	5.44E+03	0.	3.06E+02
CO--58	0.	4.58E+01	0.	0.	2.69E+04	3.08E+03	0.	6.00E+01
CO--60	0.	3.33E+02	0.	0.	1.73E+05	8.24E+03	0.	4.28E+02
ZN--65	9.38E+02	2.99E+03	0.	2.00E+03	2.52E+04	1.55E+03	0.	1.35E+03
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	0.	0.	0.	0.	0.	0.	0.	0.
KR--90	0.	0.	0.	0.	0.	0.	0.	0.
RB--86	0.	3.91E+03	0.	0.	0.	4.82E+02	0.	1.71E+03
SR--89	8.80E+03	0.	0.	0.	4.05E+04	1.01E+04	0.	2.52E+02
SR--90	2.87E+06	0.	0.	0.	2.78E+05	2.09E+04	0.	1.76E+05
Y---91	1.34E+04	0.	0.	0.	4.93E+04	1.11E+04	0.	3.59E+02
ZR--95	3.10E+03	9.95E+02	0.	1.57E+03	5.14E+04	4.35E+03	0.	6.74E+02
NB--95	4.07E+02	2.26E+02	0.	2.24E+02	1.46E+04	3.01E+03	0.	1.22E+02
RU-103	4.42E+01	0.	0.	1.69E+02	1.40E+04	3.19E+03	0.	1.91E+01
RU-106	2.00E+03	0.	0.	3.87E+03	2.73E+05	2.64E+04	0.	2.52E+02
AG110M	3.13E+02	2.89E+02	0.	5.69E+02	1.34E+05	8.75E+03	0.	1.72E+02
CD115M	0.	5.69E+03	0.	4.58E+03	4.07E+04	1.11E+04	0.	1.84E+02
SN-123	6.99E+03	1.54E+02	1.31E+02	0.	6.67E+04	9.07E+03	0.	2.27E+02
SN-125	3.66E+04	9.68E+02	2.85E+02	0.	2.71E+05	3.68E+03	0.	1.39E+03
SB-124	9.03E+02	1.70E+01	2.19E+00	0.	7.18E+04	1.18E+04	0.	3.59E+02
SB-125	1.91E+03	2.06E+01	1.70E+00	0.	6.37E+04	2.92E+03	0.	3.84E+02
TE127M	3.66E+02	1.63E+02	9.51E+01	1.32E+03	2.78E+04	4.33E+03	0.	4.54E+01
TE129M	2.82E+02	1.35E+02	9.95E+01	1.05E+03	3.36E+04	1.11E+04	0.	4.58E+01
I--131	7.29E+02	1.04E+03	3.45E+05	1.78E+03	0.	1.82E+02	0.	5.93E+02
I--133	2.50E+02	4.31E+02	8.47E+04	7.52E+02	0.	2.52E+02	0.	1.31E+02
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	0.	0.	0.	0.	0.	0.	0.	0.
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.08E+04	2.45E+04	0.	8.33E+03	2.82E+03	3.01E+02	0.	2.11E+04
CS-136	1.13E+03	4.24E+03	0.	2.48E+03	3.47E+02	3.38E+02	0.	3.22E+03
CS-137	1.38E+04	1.80E+04	0.	6.44E+03	2.18E+03	2.43E+02	0.	1.24E+04
BA-140	1.13E+03	1.42E+00	0.	4.84E-01	3.68E+04	6.32E+03	0.	7.43E+01
CE-141	5.76E+02	3.91E+02	0.	1.81E+02	1.05E+04	3.47E+03	0.	4.42E+01
CE-144	9.93E+04	4.14E+04	0.	2.45E+04	2.25E+05	2.36E+04	0.	5.32E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GROUND PLANE DEPOSITION

AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	0.	0.	0.	0.	0.	0.	0.
C---14	0.	0.	0.	0.	0.	0.	0.	0.
P---32	0.	0.	0.	0.	0.	0.	0.	0.
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	5.14E+07	4.39E+07
FE--59	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	1.03E+07	8.73E+06
CO--58	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.41E+07	1.21E+07
CO--60	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	8.00E+08	6.80E+08
ZN--65	2.36E+07	2.36E+07	2.36E+07	2.35E+07	2.36E+07	2.36E+07	2.71E+07	2.36E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	1.13E+04	9.90E+03
KR--89	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	9.70E+02	8.08E+02
KR--90	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	7.29E-03	6.16E-03
RB--86	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	3.26E+05	2.86E+05
SR--89	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	7.97E+02	6.87E+02
SR--90	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	2.01E+05	1.70E+05
Y---91	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.86E+04	3.43E+04
ZR--95	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.86E+07	1.59E+07
NB--95	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	5.09E+06	4.33E+06
RU-103	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	4.07E+06	3.49E+06
RU-106	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.59E+07	1.33E+07
AG110M	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.32E+08	1.13E+08
CD115M	0.	0.	0.	0.	0.	0.	0.	0.
SN-123	0.	0.	0.	0.	0.	0.	4.35E+04	0.
SN-126	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.83E+09	1.64E+09
SB-124	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	2.19E+07	1.90E+07
SB-125	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	8.21E+07	7.27E+07
TE127M	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	3.09E+04	2.79E+04
TE129M	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.43E+06	1.22E+06
I--131	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	3.32E+05	2.73E+05
I--133	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	4.77E+04	3.92E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	1.01E+02	8.69E+01
XE-138	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.87E+03	6.01E+03
CS-134	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.58E+08	2.22E+08
CS-136	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	5.36E+06	4.73E+06
CS-137	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.81E+08	3.27E+08
BA-140	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	6.02E+06	5.30E+06
CE-141	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.88E+05	4.33E+05
CE-144	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	4.15E+06	3.59E+06

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - FRESH FRUITS AND VEGETABLES

AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	6.80E+00	6.80E+00	6.80E+00	6.80E+00	6.80E+00	0.	6.80E+00
C---14	3.96E+03	7.94E+02	7.94E+02	7.94E+02	7.94E+02	7.94E+02	0.	7.94E+02
P---32	3.59E+07	2.25E+06	0.	0.	0.	4.03E+06	0.	1.39E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.52E+06	0.	4.52E+05	0.	4.66E+06	0.	2.90E+05
FE--59	1.13E+06	2.68E+06	0.	0.	7.45E+05	8.86E+06	0.	1.02E+05
CO--58	0.	2.13E+05	0.	0.	0.	4.31E+06	0.	4.76E+05
CO--60	0.	7.53E+05	0.	0.	0.	1.41E+07	0.	1.65E+06
ZN--65	2.05E+06	6.49E+06	0.	4.34E+06	0.	4.09E+06	0.	2.94E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.93E-08	0.	0.	0.	1.37E-09	0.	1.02E-08
KR--88	0.	5.25E-01	0.	0.	0.	0.	0.	2.78E-01
KR--89	3.64E+03	0.	0.	0.	0.	5.82E+02	0.	1.04E+02
KR--90	1.09E+02	0.	0.	0.	0.	2.56E+00	0.	2.65E+01
RB--86	0.	4.15E+06	0.	0.	0.	8.18E+05	0.	1.93E+06
SR--89	8.29E+07	0.	0.	0.	0.	1.33E+07	0.	2.38E+05
SR--90	2.99E+09	0.	0.	0.	0.	7.08E+07	0.	7.30E+08
Y---91	3.89E+04	0.	0.	0.	0.	2.14E+07	0.	1.04E+03
ZR--95	9.02E+03	3.01E+03	0.	4.59E+03	0.	1.02E+07	0.	1.96E+03
NB--95	1.52E+03	8.46E+02	0.	8.39E+02	0.	5.13E+06	0.	3.33E+02
RU-103	4.72E+04	0.	0.	1.80E+05	0.	5.51E+06	0.	2.04E+04
RU-106	9.46E+05	0.	0.	1.83E+06	0.	6.12E+07	0.	1.20E+05
AG110M	5.78E+04	5.35E+04	0.	1.05E+05	0.	2.18E+07	0.	3.18E+04
CD115M	0.	4.99E+05	0.	3.96E+05	0.	2.10E+07	0.	1.59E+04
SN-123	3.18E-07	5.27E-09	4.47E-09	0.	0.	6.46E-07	0.	7.76E-09
SN-126	2.96E+07	5.86E+05	1.72E+05	0.	1.55E+05	2.91E+07	0.	9.25E+05
SB-124	7.80E+05	1.47E+04	1.88E+03	0.	6.05E+05	2.21E+07	0.	3.08E+05
SB-125	1.54E+06	2.90E+05	2.35E+05	3.16E+06	7.99E+07	9.86E+06	0.	2.58E+05
TE127M	3.05E+06	1.07E+06	8.02E+05	1.24E+07	0.	1.39E+07	0.	3.75E+05
TE129M	3.32E+06	1.24E+06	1.15E+06	1.38E+07	0.	1.67E+07	0.	5.20E+05
I--131	1.23E+06	1.77E+05	5.78E+08	3.03E+06	0.	4.66E+05	0.	1.01E+05
I--133	3.37E+04	5.85E+04	1.13E+07	1.02E+05	0.	5.14E+04	0.	1.79E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	1.11E-04	1.03E-04	0.	3.88E-05	1.17E-05	2.40E-06	0.	4.50E-05
XE-135	3.83E-03	3.54E-03	0.	1.34E-03	4.03E-04	8.27E-05	0.	1.57E-03
XE-137	7.85E+00	1.07E+01	0.	3.65E+00	1.21E+00	2.07E-01	0.	7.03E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	2.11E+07	5.01E+07	0.	1.63E+07	5.38E+06	8.77E+05	0.	4.10E+07
CS-136	1.05E+06	4.15E+06	0.	2.31E+06	3.17E+05	4.71E+05	0.	2.99E+05
CS-137	2.95E+07	4.03E+07	0.	1.37E+07	4.54E+06	7.76E+05	0.	2.64E+07
BA-140	3.25E+06	4.28E+03	0.	1.39E+03	2.34E+03	2.11E+07	0.	2.14E+05
CE-141	2.24E+03	1.52E+03	0.	7.03E+02	0.	5.78E+06	0.	1.72E+02
CE-144	1.58E+05	6.58E+04	0.	3.90E+04	0.	5.32E+07	0.	8.49E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - STORED FRUITS AND VEGETABLES

AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	5.47E+01	5.47E+01	5.47E+01	5.47E+01	5.47E+01	0.	5.47E+01
C---14	3.22E+04	6.45E+03	6.45E+03	6.45E+03	6.45E+03	6.45E+03	0.	6.45E+03
P---32	1.67E+07	1.05E+06	0.	0.	0.	1.88E+06	0.	6.46E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.08E+07	0.	3.22E+06	0.	3.32E+07	0.	2.07E+06
FE--59	3.70E+06	8.79E+06	0.	0.	2.44E+06	2.90E+07	0.	3.35E+05
CO--58	0.	9.72E+05	0.	0.	0.	1.97E+07	0.	2.18E+05
CO--60	0.	5.99E+06	0.	0.	0.	1.12E+08	0.	1.32E+07
ZN--65	1.40E+07	4.46E+07	0.	2.98E+07	0.	2.81E+07	0.	2.02E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.38E-07	0.	0.	0.	1.11E-08	0.	8.27E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	1.32E+04	0.	0.	0.	0.	2.11E+03	0.	3.78E+02
KR--90	8.78E+02	0.	0.	0.	0.	2.21E+01	0.	2.15E+02
RB--86	0.	3.78E+06	0.	0.	0.	7.46E+05	0.	1.70E+05
SR--89	3.00E+08	0.	0.	0.	0.	4.80E+07	0.	8.60E+05
SR--90	2.42E+10	0.	0.	0.	0.	6.08E+08	0.	5.91E+09
Y---91	1.58E+05	0.	0.	0.	0.	8.70E+07	0.	4.24E+03
ZR--95	4.50E+04	1.64E+04	0.	2.32E+04	0.	6.41E+07	0.	9.80E+03
NB--95	3.85E+03	2.14E+03	0.	2.12E+03	0.	1.30E+07	0.	8.40E+02
RU-103	1.38E+05	0.	0.	5.27E+05	0.	1.61E+07	0.	5.95E+04
RU-106	6.87E+06	0.	0.	1.33E+07	0.	4.45E+08	0.	8.70E+05
AG110M	4.02E+05	3.72E+05	0.	7.30E+05	0.	1.52E+08	0.	2.21E+05
CD115M	0.	1.57E+06	0.	1.24E+06	0.	6.59E+07	0.	5.01E+04
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.41E+08	4.79E+06	1.40E+06	0.	2.12E+06	3.51E+08	0.	8.03E+05
SB-124	3.21E+06	6.06E+04	7.76E+03	0.	2.49E+06	9.09E+07	0.	1.27E+05
SB-125	1.28E+07	2.55E+06	2.08E+06	2.79E+07	6.23E+08	8.01E+07	0.	2.12E+06
TE127M	1.68E+07	5.87E+06	4.42E+06	6.81E+07	0.	7.62E+07	0.	2.07E+05
TE129M	8.10E+06	3.03E+06	2.79E+06	3.38E+07	0.	4.07E+07	0.	1.29E+05
I--131	6.23E+04	8.93E+04	2.92E+07	1.53E+05	0.	2.35E+04	0.	5.11E+04
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	9.06E-04	8.36E-04	0.	3.17E-04	9.53E-05	1.96E-05	0.	3.72E-04
XE-135	3.13E-02	2.89E-02	0.	1.09E-02	3.29E-03	6.75E-04	0.	1.28E-02
XE-137	6.35E+01	8.68E+01	0.	2.95E+01	9.79E+00	1.67E+00	0.	5.69E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.62E+08	3.86E+08	0.	1.25E+08	4.15E+07	6.76E+06	0.	3.16E+08
CS-136	3.68E+05	1.45E+06	0.	8.07E+05	1.11E+05	1.65E+05	0.	1.04E+05
CS-137	2.39E+08	3.26E+08	0.	1.11E+08	3.68E+07	6.28E+06	0.	2.14E+06
BA-140	1.08E+06	1.44E+03	0.	4.62E+02	7.78E+02	7.90E+06	0.	7.14E+04
CE-141	5.17E+03	3.50E+03	0.	1.62E+03	0.	1.34E+07	0.	3.96E+02
CE-144	1.11E+06	4.63E+05	0.	2.75E+05	0.	3.75E+08	0.	5.95E+04

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - MEAT (CONTAMINATED FORAGE) AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	6.99E+00	6.99E+00	6.99E+00	6.99E+00	6.99E+00	0.	6.99E+00
C---14	1.06E+04	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	0.	2.12E+03
P---32	1.36E+08	8.50E+06	0.	0.	0.	1.53E+07	0.	5.25E+06
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.17E+05	0.	6.46E+04	0.	6.65E+05	0.	4.15E+04
FE--59	6.77E+06	1.61E+07	0.	0.	4.46E+06	5.30E+07	0.	6.12E+05
CO--58	0.	4.50E+05	0.	0.	0.	9.11E+06	0.	1.01E+06
CO--60	0.	1.77E+06	0.	0.	0.	3.32E+07	0.	3.89E+06
ZN--65	9.56E+06	3.04E+07	0.	2.03E+07	0.	1.91E+07	0.	1.37E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	1.14E-07	0.	0.	0.	5.32E-09	0.	3.95E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	3.35E+02	0.	0.	0.	0.	5.36E+01	0.	9.59E+00
KR--90	1.12E+01	0.	0.	0.	0.	1.30E+00	0.	2.74E+00
RB--86	0.	1.35E+07	0.	0.	0.	2.65E+06	0.	6.28E+05
SR--89	7.63E+06	0.	0.	0.	0.	1.22E+06	0.	2.18E+05
SR--90	3.08E+08	0.	0.	0.	0.	3.58E+07	0.	7.54E+07
Y---91	2.83E+04	0.	0.	0.	0.	1.56E+07	0.	7.58E+02
ZR--95	8.79E+04	3.80E+04	0.	4.64E+04	0.	1.85E+08	0.	1.91E+04
NB--95	5.96E+04	3.31E+04	0.	3.28E+04	0.	2.01E+08	0.	1.30E+04
RU-103	2.73E+06	0.	0.	1.04E+07	0.	3.19E+08	0.	1.18E+05
RU-106	6.68E+07	0.	0.	1.29E+08	0.	4.33E+09	0.	8.46E+05
AG110M	1.66E+05	1.54E+05	0.	3.02E+05	0.	6.27E+07	0.	9.14E+04
CD115M	0.	3.80E+04	0.	3.02E+04	0.	1.60E+06	0.	1.22E+03
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	4.31E+08	8.55E+06	2.51E+06	0.	1.47E+05	1.44E+08	0.	1.24E+07
SB-124	4.94E+05	9.32E+03	1.19E+03	0.	3.83E+05	1.40E+07	0.	1.95E+05
SB-125	5.27E+06	1.72E+06	1.42E+06	1.92E+07	5.81E+07	2.37E+07	0.	7.44E+05
TE127M	3.28E+07	1.15E+07	8.64E+06	1.33E+08	0.	1.49E+08	0.	4.05E+05
TE129M	3.22E+07	1.20E+07	1.11E+07	1.34E+08	0.	1.61E+08	0.	5.09E+06
I--131	1.57E+05	2.25E+05	7.36E+07	3.85E+05	0.	5.92E+04	0.	1.29E+05
I--133	6.51E-03	1.13E-02	2.17E+00	1.97E-02	0.	9.93E-03	0.	3.45E-03
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	7.59E-05	7.01E-05	0.	2.65E-05	7.98E-06	1.64E-06	0.	3.12E-05
XE-135	2.62E-03	2.42E-03	0.	9.17E-04	2.76E-04	5.66E-05	0.	1.08E-03
XE-137	5.57E+00	7.61E+00	0.	2.59E+00	8.58E-01	1.47E-01	0.	4.99E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.54E+07	3.65E+07	0.	1.19E+07	3.92E+06	6.39E+05	0.	2.99E+07
CS-136	3.34E+05	1.32E+06	0.	7.35E+05	1.01E+05	1.50E+05	0.	9.50E+05
CS-137	2.09E+07	2.86E+07	0.	9.73E+06	3.23E+06	5.51E+05	0.	1.88E+07
BA-140	8.15E+05	1.02E+03	0.	3.48E+02	5.86E+02	1.95E+06	0.	5.38E+04
CE-141	3.67E+02	2.48E+02	0.	1.15E+02	0.	9.47E+05	0.	2.81E+01
CE-144	3.42E+04	1.43E+04	0.	8.45E+03	0.	1.15E+07	0.	1.83E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - MEAT (CONTAMINATED FEED) AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	6.89E+00	6.89E+00	6.89E+00	6.89E+00	6.89E+00	0.	6.89E+00
C---14	1.06E+04	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	0.	2.12E+03
P---32	7.19E+05	4.51E+04	0.	0.	0.	8.09E+04	0.	2.78E+04
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	8.20E+04	0.	2.44E+04	0.	2.51E+05	0.	1.57E+04
FE--59	7.25E+05	1.72E+06	0.	0.	4.78E+05	5.68E+06	0.	6.55E+05
CO--58	0.	8.20E+04	0.	0.	0.	1.66E+06	0.	1.84E+05
CO--60	0.	8.09E+05	0.	0.	0.	1.51E+07	0.	1.78E+05
ZN--65	3.86E+06	1.23E+07	0.	8.20E+06	0.	7.73E+06	0.	5.55E+05
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	7.79E-08	0.	0.	0.	3.65E-09	0.	2.71E-03
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	4.22E+01	0.	0.	0.	0.	6.75E+00	0.	1.21E+00
KR--90	5.55E+00	0.	0.	0.	0.	6.46E-01	0.	1.36E+00
RB--86	0.	1.94E+05	0.	0.	0.	3.83E+04	0.	9.07E+04
SR--89	9.61E+05	0.	0.	0.	0.	1.54E+05	0.	2.75E+04
SR--90	1.53E+08	0.	0.	0.	0.	1.78E+07	0.	3.74E+07
Y---91	4.27E+03	0.	0.	0.	0.	2.35E+06	0.	1.15E+02
ZR--95	2.72E+04	1.33E+04	0.	1.47E+04	0.	7.32E+07	0.	5.92E+03
NB--95	4.23E+03	2.35E+03	0.	2.33E+03	0.	1.43E+07	0.	9.24E+02
RU-103	2.46E+05	0.	0.	9.38E+05	0.	2.87E+07	0.	1.06E+05
RU-106	2.65E+07	0.	0.	5.12E+07	0.	1.71E+09	0.	3.35E+06
AG110M	6.32E+04	5.85E+04	0.	1.15E+05	0.	2.39E+07	0.	3.48E+04
CD115M	0.	3.92E+03	0.	3.11E+03	0.	1.65E+05	0.	1.25E+02
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-125	2.01E+08	4.00E+06	1.17E+06	0.	8.56E+04	6.92E+07	0.	5.78E+06
SB-124	7.64E+04	1.44E+03	1.85E+02	0.	5.93E+04	2.16E+06	0.	3.02E+04
SB-125	4.95E+06	1.71E+06	1.42E+06	1.92E+07	2.54E+07	2.10E+07	0.	6.80E+05
TE127M	9.83E+06	3.44E+06	2.59E+06	3.98E+07	0.	4.46E+07	0.	1.21E+05
TE129M	2.38E+06	8.89E+05	8.20E+05	9.93E+06	0.	1.20E+07	0.	3.78E+05
I--131	2.58E+01	3.70E+01	1.21E+04	6.33E+01	0.	9.74E+00	0.	2.12E+01
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	3.83E-05	3.54E-05	0.	1.34E-05	4.03E-06	8.28E-07	0.	1.57E-05
XE-135	1.32E-03	1.22E-03	0.	4.63E-04	1.39E-04	2.86E-05	0.	5.43E-04
XE-137	2.68E+00	3.66E+00	0.	1.23E+00	4.13E-01	7.05E-02	0.	2.40E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	6.56E+06	1.56E+07	0.	5.06E+05	1.68E+06	2.73E+05	0.	1.28E+07
CS-136	1.08E+03	4.27E+03	0.	2.38E+03	3.26E+02	4.85E+02	0.	3.07E+03
CS-137	1.01E+07	1.38E+07	0.	4.68E+06	1.55E+06	2.65E+05	0.	9.02E+06
BA-140	2.44E+03	3.08E+00	0.	1.04E+00	1.76E+00	5.83E+03	0.	1.61E+02
CE-141	2.26E+01	1.53E+01	0.	7.09E+00	0.	5.83E+04	0.	1.73E+00
CE-144	1.25E+04	5.21E+03	0.	3.09E+03	0.	4.21E+06	0.	6.69E+02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FORAGE) AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	0.	1.65E+01
C---14	1.15E+04	2.31E+03	2.31E+03	2.31E+03	2.31E+03	2.31E+03	0.	2.31E+03
P---32	4.97E+08	3.12E+07	0.	0.	0.	5.59E+07	0.	1.92E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.99E+05	0.	5.92E+04	0.	6.09E+05	0.	3.80E+04
FE--59	7.55E+05	1.79E+06	0.	0.	4.98E+05	5.92E+06	0.	6.82E+05
CO--58	0.	1.16E+05	0.	0.	0.	2.35E+06	0.	2.60E+05
CO--60	0.	3.87E+05	0.	0.	0.	7.24E+06	0.	8.50E+05
ZN--65	3.69E+07	1.17E+08	0.	7.83E+07	0.	7.38E+07	0.	5.30E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	3.10E-07	0.	0.	0.	1.45E-08	0.	1.08E-07
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	1.61E+03	0.	0.	0.	0.	2.58E+02	0.	4.61E+01
KR--90	4.21E+01	0.	0.	0.	0.	5.71E-01	0.	1.03E+01
RB--86	0.	7.15E+07	0.	0.	0.	1.41E+07	0.	3.34E+07
SR--89	3.67E+07	0.	0.	0.	0.	5.86E+06	0.	1.05E+05
SR--90	1.15E+09	0.	0.	0.	0.	1.58E+07	0.	2.84E+08
Y---91	2.14E+02	0.	0.	0.	0.	1.18E+05	0.	5.74E+00
ZR--95	5.80E+02	3.17E+02	0.	3.18E+02	0.	1.90E+06	0.	1.27E+02
NB--95	2.14E+03	1.19E+03	0.	1.18E+03	0.	7.22E+06	0.	4.67E+02
RU-103	2.63E+01	0.	0.	1.01E+02	0.	3.07E+03	0.	1.13E+01
RU-106	4.87E+02	0.	0.	9.42E+02	0.	3.15E+04	0.	6.17E+01
AG110M	1.45E+06	1.34E+06	0.	2.63E+06	0.	5.46E+08	0.	7.95E+05
CD115M	0.	3.24E+04	0.	2.57E+04	0.	1.37E+06	0.	1.04E+03
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	3.81E+07	7.56E+05	2.22E+05	0.	9.86E+04	2.41E+07	0.	1.14E+05
SB-124	6.43E+05	1.21E+04	1.55E+03	0.	4.99E+05	1.82E+07	0.	2.54E+05
SB-125	7.85E+05	7.54E+04	5.77E+04	7.73E+05	6.22E+07	6.02E+06	0.	1.45E+05
TE127M	1.35E+06	4.74E+05	3.56E+05	5.50E+06	0.	6.15E+06	0.	1.67E+05
TE129M	1.69E+06	6.35E+05	5.86E+05	7.09E+06	0.	8.53E+06	0.	2.69E+05
I--131	4.31E+06	6.18E+06	2.02E+09	1.06E+07	0.	1.63E+06	0.	3.53E+05
I--133	5.92E+04	1.03E+05	1.97E+07	1.79E+05	0.	9.02E+04	0.	3.13E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	6.42E-04	5.93E-04	0.	2.25E-04	6.75E-05	1.39E-05	0.	2.63E-04
XE-135	2.22E-02	2.05E-02	0.	7.75E-03	2.33E-03	4.79E-04	0.	9.09E-03
XE-137	4.71E+01	6.44E+01	0.	2.19E+01	7.27E+00	1.24E+00	0.	4.22E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.32E+08	3.14E+08	0.	1.02E+08	3.37E+07	5.49E+06	0.	2.57E+08
CS-136	7.30E+06	2.91E+07	0.	1.62E+07	2.22E+06	3.31E+06	0.	2.10E+07
CS-137	1.77E+08	2.42E+08	0.	8.24E+07	2.73E+07	4.66E+06	0.	1.59E+08
BA-140	7.61E+05	9.56E+02	0.	3.25E+02	5.47E+02	1.61E+06	0.	5.02E+04
CE-141	7.59E+02	5.13E+02	0.	2.38E+02	0.	1.96E+06	0.	5.81E+01
CE-144	5.03E+04	2.10E+04	0.	1.25E+04	0.	1.70E+07	0.	2.70E+03

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FEED) — AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.62E+01	1.62E+01	1.62E+01	1.62E+01	1.62E+01	0.	1.62E+01
C---14	1.15E+04	2.31E+03	2.31E+03	2.31E+03	2.31E+03	2.31E+03	0.	2.31E+03
P---32	2.64E+06	1.65E+05	0.	0.	0.	2.96E+05	0.	1.02E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	7.52E+04	0.	2.24E+04	0.	2.30E+05	0.	1.44E+04
FE--59	8.09E+04	1.92E+05	0.	0.	5.33E+04	6.34E+05	0.	7.31E+04
CO--58	0.	2.12E+04	0.	0.	0.	4.29E+05	0.	4.75E+04
CO--60	0.	1.76E+05	0.	0.	0.	3.30E+06	0.	3.87E+05
ZN--65	1.49E+07	4.73E+07	0.	3.15E+07	0.	2.98E+07	0.	2.14E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.13E-07	0.	0.	0.	9.96E-09	0.	7.40E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	2.03E+02	0.	0.	0.	0.	3.24E+01	0.	5.81E+00
KR--90	2.09E+01	0.	0.	0.	0.	2.83E-01	0.	5.11E+00
RB--86	0.	1.03E+06	0.	0.	0.	2.04E+05	0.	4.82E+05
SR--89	4.62E+06	0.	0.	0.	0.	7.38E+05	0.	1.32E+05
SR--90	5.76E+08	0.	0.	0.	0.	7.80E+06	0.	1.41E+08
Y---91	3.23E+01	0.	0.	0.	0.	1.78E+04	0.	8.67E-01
ZR--95	5.45E+02	3.02E+02	0.	3.00E+02	0.	1.83E+06	0.	1.19E+02
NB--95	1.52E+02	8.45E+01	0.	8.37E+01	0.	5.13E+05	0.	3.32E+01
RU-103	2.36E+00	0.	0.	9.03E+00	0.	2.76E+02	0.	1.02E+00
RU-106	1.93E+02	0.	0.	3.73E+02	0.	1.25E+04	0.	2.44E+01
AG110M	5.50E+05	5.08E+05	0.	1.00E+06	0.	2.08E+08	0.	3.02E+05
CD115M	0.	3.34E+03	0.	2.65E+03	0.	1.41E+05	0.	1.07E+02
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	1.79E+07	3.55E+05	1.04E+05	0.	9.52E+04	1.78E+07	0.	5.61E+05
SB-124	9.93E+04	1.87E+03	2.40E+02	0.	7.71E+04	2.81E+06	0.	3.92E+04
SB-125	4.64E+05	7.66E+04	6.15E+04	8.27E+05	2.72E+07	3.11E+06	0.	7.97E+04
TE127M	4.05E+05	1.41E+05	1.07E+05	1.65E+06	0.	1.85E+06	0.	5.00E+04
TE129M	1.25E+05	4.70E+04	4.34E+04	5.24E+05	0.	6.31E+05	0.	1.99E+04
I--131	7.09E+02	1.02E+03	3.32E+05	1.74E+03	0.	2.68E+02	0.	5.81E+02
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	3.24E-04	2.99E-04	0.	1.13E-04	3.41E-05	7.00E-06	0.	1.33E-04
XE-135	1.12E-02	1.03E-02	0.	3.91E-03	1.18E-03	2.41E-04	0.	4.59E-03
XE-137	2.27E+01	3.10E+01	0.	1.05E+01	3.50E+00	5.97E-01	0.	2.05E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	5.04E+07	1.34E+08	0.	4.35E+07	1.44E+07	2.35E+06	0.	1.10E+08
CS-136	2.39E+04	9.42E+04	0.	5.24E+04	7.19E+03	1.07E+04	0.	6.78E+04
CS-137	8.52E+07	1.16E+08	0.	3.95E+07	1.31E+07	2.24E+06	0.	7.63E+07
BA-140	2.28E+03	2.86E+00	0.	9.74E-01	1.04E+00	4.84E+03	0.	1.50E+02
CE-141	4.67E+01	3.16E+01	0.	1.47E+01	0.	1.21E+05	0.	3.58E+00
CE-144	1.84E+04	7.66E+03	0.	4.55E+03	0.	6.20E+06	0.	9.04E+02

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATED FORAGE) AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.36E+01	3.36E+01	3.36E+01	3.36E+01	3.36E+01	0.	3.36E+01
C---14	1.15E+04	2.31E+03	2.31E+03	2.31E+03	2.31E+03	2.31E+03	0.	2.31E+03
P---32	6.41E+08	4.02E+07	0.	0.	0.	7.21E+07	0.	2.48E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.39E+04	0.	7.13E+03	0.	7.34E+04	0.	4.57E+03
FE--59	1.01E+04	2.39E+04	0.	0.	6.62E+03	7.87E+04	0.	9.08E+03
CO--58	0.	1.42E+04	0.	0.	0.	2.87E+05	0.	3.17E+04
CO--60	0.	4.65E+04	0.	0.	0.	8.69E+05	0.	1.02E+05
ZN--65	4.45E+06	1.41E+07	0.	9.44E+06	0.	8.89E+06	0.	6.39E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	3.72E-08	0.	0.	0.	1.74E-09	0.	1.29E-08
KR--88	0.	3.75E-10	0.	0.	0.	0.	0.	1.99E-10
KR--89	3.45E+03	0.	0.	0.	0.	5.52E+02	0.	9.89E+01
KR--90	8.85E+01	0.	0.	0.	0.	1.19E+00	0.	2.16E+01
RB--86	0.	9.07E+06	0.	0.	0.	1.79E+06	0.	4.23E+06
SR--89	7.86E+07	0.	0.	0.	0.	1.26E+07	0.	2.25E+06
SR--90	2.44E+09	0.	0.	0.	0.	3.27E+07	0.	5.96E+08
Y---91	2.62E+01	0.	0.	0.	0.	1.44E+04	0.	7.01E-01
ZR--95	6.30E+01	3.43E+01	0.	3.45E+01	0.	2.06E+05	0.	1.37E+01
NB--95	2.65E+02	1.47E+02	0.	1.46E+02	0.	8.92E+05	0.	5.78E+01
RU-103	3.24E+00	0.	0.	1.24E+01	0.	3.78E+02	0.	1.40E+00
RU-106	5.86E+01	0.	0.	1.13E+02	0.	3.80E+03	0.	7.42E+00
AG110M	1.74E+05	1.61E+05	0.	3.17E+05	0.	6.57E+07	0.	9.58E+04
CD115M	0.	3.99E+03	0.	3.17E+03	0.	1.68E+05	0.	1.28E+02
SN-123	1.61E-02	2.68E-04	2.27E-04	0.	0.	3.28E-02	0.	3.94E-04
SN-126	4.57E+06	9.08E+04	2.66E+04	0.	1.09E+04	2.76E+06	0.	1.36E+05
SB-124	7.85E+04	1.48E+03	1.90E+02	0.	6.09E+04	2.22E+06	0.	3.10E+04
SB-125	9.45E+04	9.12E+03	6.99E+03	9.35E+04	7.47E+06	7.24E+05	0.	1.75E+04
TE127M	1.65E+05	5.74E+04	4.31E+04	6.65E+05	0.	7.43E+05	0.	2.03E+04
TE129M	2.11E+05	7.86E+04	7.25E+04	8.77E+05	0.	1.06E+06	0.	3.33E+04
I--131	5.89E+06	8.43E+06	2.76E+09	1.44E+07	0.	2.22E+06	0.	4.83E+05
I--133	2.33E+05	4.04E+05	7.77E+07	7.06E+05	0.	3.55E+05	0.	1.23E+05
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	1.93E-03	1.78E-03	0.	6.74E-04	2.02E-04	4.16E-05	0.	7.90E-04
XE-135	6.65E-02	6.14E-02	0.	2.33E-02	6.99E-03	1.44E-03	0.	2.73E-02
XE-137	1.41E+02	1.93E+02	0.	6.58E+01	2.18E+01	3.72E+00	0.	1.27E+02
XE-138	7.10E-05	1.40E-04	0.	1.03E-04	1.02E-05	5.98E-10	0.	6.96E-05
CS-134	3.96E+08	9.43E+08	0.	3.06E+08	1.01E+08	1.65E+07	0.	7.71E+08
CS-136	2.40E+07	9.47E+07	0.	5.27E+07	7.22E+06	1.08E+07	0.	6.82E+07
CS-137	5.31E+08	7.26E+08	0.	2.47E+08	8.19E+07	1.40E+07	0.	4.76E+08
BA-140	9.90E+04	1.24E+02	0.	4.23E+01	7.12E+01	2.09E+05	0.	6.54E+03
CE-141	9.40E+01	6.36E+01	0.	2.95E+01	0.	2.43E+05	0.	7.20E+00
CE-144	6.06E+03	2.53E+03	0.	1.50E+03	0.	2.04E+06	0.	3.25E+02

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATED FEED) AGE GROUP - ADULT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.31E+01	3.31E+01	3.31E+01	3.31E+01	3.31E+01	0.	3.31E+01
C---14	1.15E+04	2.31E+03	2.31E+03	2.31E+03	2.31E+03	2.31E+03	0.	2.31E+03
P---32	3.40E+06	2.13E+05	0.	0.	0.	3.83E+05	0.	1.32E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	9.05E+03	0.	2.69E+03	0.	2.77E+04	0.	1.73E+03
FE--59	1.08E+03	2.56E+03	0.	0.	7.09E+02	8.43E+03	0.	9.72E+02
CO--58	0.	2.58E+03	0.	0.	0.	5.23E+04	0.	5.78E+03
CO--60	0.	2.12E+04	0.	0.	0.	3.96E+05	0.	4.65E+04
ZN--65	1.80E+06	5.70E+06	0.	3.81E+06	0.	3.59E+06	0.	2.58E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.55E-08	0.	0.	0.	1.20E-09	0.	8.88E-09
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	4.35E+02	0.	0.	0.	0.	6.95E+01	0.	1.25E+01
KR--90	4.39E+01	0.	0.	0.	0.	5.88E-01	0.	1.07E+01
RB--86	0.	1.31E+05	0.	0.	0.	2.58E+04	0.	6.11E+04
SR--89	9.90E+06	0.	0.	0.	0.	1.58E+06	0.	2.84E+05
SR--90	1.21E+09	0.	0.	0.	0.	1.62E+07	0.	2.95E+08
Y---91	3.95E+00	0.	0.	0.	0.	2.17E+03	0.	1.06E-01
ZR--95	6.60E+01	3.66E+01	0.	3.62E+01	0.	2.21E+05	0.	1.44E+01
NB--95	1.88E+01	1.04E+01	0.	1.04E+01	0.	6.34E+04	0.	4.10E+00
RU-103	2.91E-01	0.	0.	1.11E+00	0.	3.40E+01	0.	1.26E-01
RU-106	2.32E+01	0.	0.	4.49E+01	0.	1.50E+03	0.	2.94E+00
AG110M	6.62E+04	6.12E+04	0.	1.20E+05	0.	2.50E+07	0.	3.64E+04
CD115M	0.	4.11E+02	0.	3.26E+02	0.	1.73E+04	0.	1.31E+01
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.15E+06	4.26E+04	1.25E+04	0.	1.15E+04	2.14E+06	0.	6.74E+04
SB-124	1.21E+04	2.29E+02	2.93E+01	0.	9.41E+03	3.43E+05	0.	4.79E+03
SB-125	5.61E+04	9.33E+03	7.48E+03	1.01E+05	3.27E+06	3.76E+05	0.	9.61E+03
TE127M	4.91E+04	1.72E+04	1.29E+04	1.99E+05	0.	2.23E+05	0.	6.05E+03
TE129M	1.55E+04	5.82E+03	5.42E+03	6.49E+04	0.	7.81E+04	0.	2.47E+03
I--131	9.68E+02	1.39E+03	4.54E+05	2.37E+03	0.	3.65E+02	0.	7.93E+02
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	9.72E-04	8.98E-04	0.	3.40E-04	1.02E-04	2.10E-05	0.	3.99E-04
XE-135	3.35E-02	3.10E-02	0.	1.17E-02	3.53E-03	7.24E-04	0.	1.38E-02
XE-137	6.80E+01	9.29E+01	0.	3.15E+01	1.05E+01	1.79E+00	0.	6.10E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.69E+08	4.03E+08	0.	1.31E+08	4.33E+07	7.05E+06	0.	3.30E+08
CS-136	7.76E+04	3.06E+05	0.	1.70E+05	2.34E+04	3.48E+04	0.	2.20E+05
CS-137	2.56E+08	3.49E+08	0.	1.19E+08	3.94E+07	6.73E+06	0.	2.29E+08
BA-140	2.97E+02	3.73E-01	0.	1.27E-01	2.13E-01	6.30E+02	0.	1.96E+01
CE-141	5.79E+00	3.92E+00	0.	1.82E+00	0.	1.50E+04	0.	4.44E-01
CE-144	2.21E+03	9.23E+02	0.	5.48E+02	0.	7.47E+05	0.	1.19E+02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - INHALATION

AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.71E+01	1.71E+01	2.17E+01	1.71E+01	1.71E+01	0.	1.71E+01
C---14	9.15E+01	9.15E+01	9.15E+01	6.91E+01	9.15E+01	9.15E+01	0.	9.15E+01
P---32	2.67E+04	1.56E+03	0.	0.	0.	1.75E+03	0.	1.01E+03
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	8.01E+02	0.	1.99E+02	2.83E+04	1.56E+03	0.	1.27E+02
FE--59	2.38E+02	5.61E+05	0.	0.	2.05E+04	3.80E+03	0.	2.14E+02
CO--58	0.	3.56E+00	0.	0.	2.77E+04	1.92E+03	0.	4.74E+00
CO--60	0.	2.51E+01	0.	0.	1.73E+05	4.76E+03	0.	3.33E+01
ZN--65	6.55E+02	2.09E+03	0.	1.39E+03	1.76E+04	1.08E+03	0.	9.41E+02
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	0.	0.	0.	0.	0.	0.	0.	0.
KR--90	0.	0.	0.	0.	0.	0.	0.	0.
RB--86	0.	2.73E+03	0.	0.	0.	3.36E+02	0.	1.19E+03
SR--89	7.83E+02	0.	0.	0.	5.06E+04	7.15E+03	0.	2.25E+01
SR--90	2.39E+05	0.	0.	0.	3.35E+05	1.46E+04	0.	1.45E+04
Y---91	1.09E+03	0.	0.	0.	5.77E+04	7.55E+03	0.	2.91E+01
ZR--95	2.20E+02	7.34E+01	0.	1.10E+03	5.18E+04	2.69E+03	0.	5.13E+01
NB--95	2.75E+01	1.67E+01	0.	1.56E+02	1.45E+04	1.78E+03	0.	9.35E+00
RU-103	3.30E+00	0.	0.	1.18E+02	1.52E+04	1.91E+03	0.	1.48E+00
RU-106	1.70E+02	0.	0.	2.70E+03	3.32E+05	1.88E+04	0.	2.14E+01
AG110M	2.18E+02	2.02E+02	0.	3.98E+02	9.38E+04	6.11E+03	0.	1.20E+02
CD115M	0.	3.98E+03	0.	3.20E+03	2.85E+04	7.76E+03	0.	1.29E+02
SN-123	5.64E+02	1.24E+01	9.95E+00	0.	7.91E+04	6.32E+03	0.	1.86E+01
SN-125	2.56E+04	6.76E+02	1.99E+02	0.	1.89E+05	2.57E+03	0.	9.70E+02
SB-124	6.31E+02	1.19E+01	1.53E+00	0.	5.01E+04	8.22E+03	0.	2.51E+02
SB-125	1.34E+03	1.44E+01	1.19E+00	0.	4.45E+04	2.04E+03	0.	2.69E+02
TE127M	2.56E+02	1.14E+02	6.65E+01	9.25E+02	1.94E+04	3.02E+03	0.	3.17E+01
TE129M	2.41E+01	1.14E+01	7.89E+00	7.39E+02	4.11E+04	7.76E+03	0.	3.88E+00
I--131	6.81E+02	9.54E+02	2.81E+05	1.24E+03	0.	1.21E+02	0.	5.69E+02
I--133	2.49E+02	4.17E+02	7.75E+04	5.25E+02	0.	2.02E+02	0.	1.28E+02
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	0.	0.	0.	0.	0.	0.	0.	0.
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	9.77E+03	2.23E+04	0.	5.82E+03	2.91E+03	1.81E+02	0.	1.10E+04
CS-135	7.91E+02	2.96E+03	0.	1.73E+03	2.43E+02	2.36E+02	0.	2.25E+03
CS-137	1.30E+04	1.67E+04	0.	4.50E+03	2.38E+03	1.55E+02	0.	6.13E+03
BA-140	1.07E+02	9.80E-02	0.	3.38E-01	4.09E+04	4.29E+02	0.	6.91E+00
CE-141	4.59E+01	3.07E+01	0.	1.27E+02	1.18E+04	2.30E+03	0.	3.55E+00
CE-144	8.47E+03	3.51E+03	0.	1.71E+04	2.78E+05	1.70E+04	0.	4.53E+02

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GROUND PLANE DEPOSITION

AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	0.	0.	0.	0.	0.	0.	0.
C---14	0.	0.	0.	0.	0.	0.	0.	0.
P---32	0.	0.	0.	0.	0.	0.	0.	0.
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	5.14E+07	4.39E+07
FE--59	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	1.03E+07	8.73E+06
CO--58	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.41E+07	1.21E+07
CO--60	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	8.00E+08	6.80E+08
ZN--65	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.71E+07	2.36E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	1.13E+04	9.90E+03
KR--89	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	9.70E+02	8.08E+02
KR--90	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	7.29E-03	6.16E-03
RB--86	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	3.26E+05	2.86E+05
SR--89	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	7.97E+02	6.87E+02
SR--90	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	2.01E+05	1.70E+05
Y---91	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.86E+04	3.43E+04
ZR--95	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.86E+07	1.59E+07
NB--95	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	5.09E+06	4.33E+06
RU-103	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	4.07E+06	3.49E+06
RU-106	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.59E+07	1.33E+07
AG110M	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.32E+08	1.13E+08
CD115M	0.	0.	0.	0.	0.	0.	0.	0.
SN-123	0.	0.	0.	0.	0.	0.	4.35E+04	0.
SN-126	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.83E+09	1.64E+09
SB-124	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	2.19E+07	1.90E+07
SB-125	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	8.21E+07	7.27E+07
TE127M	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	3.09E+04	2.79E+04
TE129M	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.43E+06	1.22E+06
I--131	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	3.32E+05	2.73E+05
I--133	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	4.77E+04	3.92E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	1.01E+02	8.69E+01
XE-138	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.87E+03	6.01E+03
CS-134	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.58E+08	2.22E+08
CS-135	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	5.36E+06	4.73E+06
CS-137	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.81E+08	3.27E+08
BA-140	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	6.02E+06	5.30E+06
CE-141	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.88E+05	4.33E+05
CE-144	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	4.15E+06	3.59E+06

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - FRESH FRUITS AND VEGETABLES AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.53E+00	3.53E+00	4.45E+00	3.53E+00	3.53E+00	0.	3.53E+00
C---14	6.91E+02	6.91E+02	6.91E+02	5.21E+02	6.91E+02	6.91E+02	0.	6.91E+02
P---32	2.35E+07	1.48E+06	0.	0.	0.	2.65E+06	0.	9.11E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	9.97E+05	0.	2.97E+05	0.	3.06E+06	0.	1.91E+05
FE--59	7.42E+05	1.76E+06	0.	0.	4.89E+05	5.82E+06	0.	6.70E+05
CO--58	0.	1.86E+05	0.	0.	0.	2.51E+06	0.	4.23E+05
CO--60	0.	6.34E+05	0.	0.	0.	7.61E+06	0.	1.45E+05
ZN--65	1.34E+06	4.26E+06	0.	2.85E+05	0.	2.68E+06	0.	1.93E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	1.92E-08	0.	0.	0.	8.99E-10	0.	6.68E-09
KR--88	0.	3.45E-01	0.	0.	0.	0.	0.	1.83E-01
KR--89	3.56E+03	0.	0.	0.	0.	3.86E+02	0.	1.02E+02
KR--90	9.73E+01	0.	0.	0.	2.69E-01	2.84E+00	0.	2.41E+01
RB--86	0.	2.72E+06	0.	0.	0.	5.37E+05	0.	1.27E+05
SR--89	8.10E+07	0.	0.	0.	0.	8.79E+06	0.	2.33E+05
SR--90	2.68E+09	0.	0.	0.	7.40E+06	7.82E+07	0.	6.62E+08
Y---91	3.55E+04	0.	0.	0.	0.	1.36E+07	0.	9.47E+02
ZR--95	7.23E+03	2.51E+03	0.	3.02E+03	0.	5.85E+06	0.	1.72E+03
NB--95	1.16E+03	7.00E+02	0.	5.50E+02	0.	2.86E+06	0.	3.95E+02
RU-103	3.97E+04	0.	0.	1.18E+05	0.	3.10E+06	0.	1.78E+04
RU-106	9.03E+05	0.	0.	1.20E+06	0.	4.09E+07	0.	1.14E+05
AG110M	3.80E+04	3.51E+04	0.	6.90E+04	0.	1.43E+07	0.	2.09E+04
CD115M	0.	3.27E+05	0.	2.60E+05	0.	1.38E+07	0.	1.05E+04
SN-123	2.93E-07	4.84E-09	3.87E-09	0.	0.	4.23E-07	0.	7.24E-09
SN-126	1.94E+07	3.85E+05	1.13E+05	0.	1.02E+05	1.91E+07	0.	6.07E+05
SB-124	5.12E+05	9.65E+03	1.24E+03	0.	3.97E+05	1.45E+07	0.	2.02E+05
SB-125	1.23E+06	2.66E+05	2.06E+05	2.08E+06	5.24E+07	6.47E+06	0.	1.98E+05
TE127M	2.01E+06	7.04E+05	5.33E+05	8.12E+06	0.	1.01E+07	0.	2.49E+05
TE129M	3.14E+06	1.16E+06	1.00E+06	9.09E+05	0.	1.10E+07	0.	4.94E+05
I--131	1.08E+06	1.53E+06	4.42E+08	1.99E+05	0.	2.90E+05	0.	9.13E+05
I--133	3.14E+04	5.33E+04	9.68E+06	6.70E+04	0.	3.87E+04	0.	1.64E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	7.29E-05	6.73E-05	0.	2.55E-05	7.66E-06	1.57E-06	0.	2.99E-05
XE-135	2.51E-03	2.32E-03	0.	8.79E-04	2.64E-04	5.43E-05	0.	1.03E-03
XE-137	6.91E+00	9.29E+00	0.	2.39E+00	1.23E+00	1.24E-01	0.	3.26E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.79E+07	4.31E+07	0.	1.07E+07	5.22E+06	4.98E+05	0.	2.01E+07
CS-136	6.90E+05	2.72E+06	0.	1.52E+06	2.08E+05	3.09E+05	0.	1.96E+06
CS-137	2.59E+07	3.49E+07	0.	8.99E+06	4.65E+06	4.66E+05	0.	1.22E+07
BA-140	2.97E+06	3.83E+03	0.	9.11E+02	2.45E+03	1.01E+07	0.	1.91E+05
CE-141	1.98E+03	1.33E+03	0.	4.61E+02	0.	3.59E+06	0.	1.52E+02
CE-144	1.53E+05	6.27E+04	0.	2.56E+04	0.	3.60E+07	0.	8.11E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - STORED FRUITS AND VEGETABLES AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	5.25E+01	5.25E+01	6.63E+01	5.25E+01	5.25E+01	0.	5.25E+01
C---14	1.04E+04	1.04E+04	1.04E+04	7.82E+03	1.04E+04	1.04E+04	0.	1.04E+04
P---32	2.02E+07	1.27E+06	0.	0.	0.	2.27E+06	0.	7.83E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.31E+07	0.	3.91E+06	0.	4.02E+07	0.	2.51E+05
FE--59	4.49E+06	1.07E+07	0.	0.	2.96E+06	3.52E+07	0.	4.05E+05
CO--58	0.	1.57E+06	0.	0.	0.	2.12E+07	0.	3.57E+05
CO--60	0.	9.31E+06	0.	0.	0.	1.12E+08	0.	2.13E+07
ZN--65	1.70E+07	5.40E+07	0.	3.61E+07	0.	3.40E+07	0.	2.45E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.88E-07	0.	0.	0.	1.35E-08	0.	1.00E-07
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	2.38E+04	0.	0.	0.	0.	2.58E+03	0.	6.83E+02
KR--90	1.45E+03	0.	0.	0.	4.60E+00	4.42E+01	0.	3.59E+02
RB--86	0.	4.58E+05	0.	0.	0.	9.04E+05	0.	2.14E+05
SR--89	5.42E+08	0.	0.	0.	0.	5.87E+07	0.	1.55E+07
SR--90	4.00E+10	0.	0.	0.	1.27E+08	1.22E+09	0.	9.90E+09
Y---91	2.66E+05	0.	0.	0.	0.	1.02E+08	0.	7.10E+03
ZR--95	6.62E+04	2.52E+04	0.	2.81E+04	0.	6.75E+07	0.	1.67E+04
NB--95	5.42E+03	3.26E+03	0.	2.57E+03	0.	1.33E+07	0.	1.84E+03
RU-103	2.14E+05	0.	0.	6.39E+05	0.	1.67E+07	0.	9.58E+04
RU-106	1.21E+07	0.	0.	1.61E+07	0.	5.48E+08	0.	1.52E+05
AG110M	4.07E+05	4.50E+05	0.	8.85E+05	0.	1.84E+08	0.	2.68E+05
CD115M	0.	1.90E+06	0.	1.51E+06	0.	7.98E+07	0.	6.05E+04
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.92E+08	5.81E+06	1.71E+06	0.	2.57E+06	4.26E+08	0.	9.72E+06
SB-124	3.89E+06	7.34E+04	9.40E+03	0.	3.02E+06	1.10E+08	0.	1.54E+05
SB-125	1.91E+07	4.33E+06	3.36E+05	3.38E+07	7.55E+08	9.70E+07	0.	3.03E+05
TE127M	2.04E+07	7.16E+06	5.41E+06	8.25E+07	0.	1.03E+08	0.	2.53E+05
TE129M	1.41E+07	5.24E+06	4.53E+06	4.09E+07	0.	4.93E+07	0.	2.23E+06
I--131	1.01E+05	1.43E+05	4.12E+07	1.85E+05	0.	2.71E+04	0.	8.51E+04
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	1.10E-03	1.01E-03	0.	3.84E-04	1.15E-04	2.37E-05	0.	4.50E-04
XE-135	3.79E-02	3.50E-02	0.	1.33E-02	3.98E-03	8.18E-04	0.	1.55E-02
XE-137	1.03E+02	1.39E+02	0.	3.58E+01	1.84E+01	1.85E+00	0.	4.87E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	2.54E+08	6.13E+08	0.	1.52E+08	7.43E+07	7.08E+06	0.	2.86E+08
CS-135	4.45E+05	1.76E+06	0.	9.78E+05	1.34E+05	2.00E+05	0.	1.27E+05
CS-137	3.08E+08	5.22E+08	0.	1.34E+08	6.92E+07	6.96E+06	0.	1.83E+08
BA-140	1.83E+06	2.38E+03	0.	5.60E+02	1.50E+03	7.31E+06	0.	1.17E+05
CE-141	8.42E+03	5.65E+03	0.	1.97E+03	0.	1.53E+07	0.	6.48E+02
CE-144	1.99E+06	8.14E+05	0.	3.33E+05	0.	4.68E+08	0.	1.05E+05

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - MEAT (CONTAMINATED FORAGE) AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.27E+00	3.27E+00	4.13E+00	3.27E+00	3.27E+00	0.	3.27E+00
C---14	1.66E+03	1.66E+03	1.66E+03	1.25E+03	1.66E+03	1.66E+03	0.	1.66E+03
P---32	8.01E+07	5.02E+06	0.	0.	0.	9.01E+06	0.	3.10E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.28E+05	0.	3.82E+04	0.	3.93E+05	0.	2.45E+04
FE--59	4.00E+06	9.50E+06	0.	0.	2.64E+06	3.13E+07	0.	3.61E+05
CO--58	0.	3.54E+05	0.	0.	0.	4.78E+06	0.	8.06E+05
CO--60	0.	1.35E+06	0.	0.	0.	1.61E+07	0.	3.07E+05
ZN--65	5.65E+06	1.80E+07	0.	1.20E+07	0.	1.13E+07	0.	8.12E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	6.71E-08	0.	0.	0.	3.14E-09	0.	2.34E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	2.95E+02	0.	0.	0.	0.	3.20E+01	0.	8.46E+00
KR--90	9.04E+00	0.	0.	0.	2.50E-01	9.17E-01	0.	2.24E+00
RB--86	0.	7.95E+05	0.	0.	0.	1.57E+06	0.	3.71E+05
SR--89	6.71E+06	0.	0.	0.	0.	7.28E+05	0.	1.93E+05
SR--90	2.49E+08	0.	0.	0.	6.88E+06	2.53E+07	0.	6.16E+07
Y---91	2.32E+04	0.	0.	0.	0.	8.93E+06	0.	6.20E+02
ZR--95	6.21E+04	2.83E+04	0.	2.75E+04	0.	9.41E+07	0.	1.75E+04
NB--95	4.09E+04	2.46E+04	0.	1.94E+04	0.	1.01E+08	0.	1.39E+04
RU-103	2.07E+06	0.	0.	6.17E+05	0.	1.61E+08	0.	9.25E+05
RU-106	5.74E+07	0.	0.	7.64E+07	0.	2.60E+09	0.	7.22E+06
AG110M	9.82E+04	9.08E+04	0.	1.79E+05	0.	3.71E+07	0.	5.40E+04
CD115M	0.	2.25E+04	0.	1.78E+04	0.	9.46E+05	0.	7.18E+02
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.55E+08	5.05E+06	1.48E+06	0.	8.66E+04	8.47E+07	0.	7.30E+05
SB-124	2.92E+05	5.51E+03	7.06E+02	0.	2.27E+05	8.26E+06	0.	1.15E+05
SB-125	4.31E+06	1.42E+06	1.12E+06	1.13E+07	3.43E+07	1.40E+07	0.	5.94E+05
TE127M	1.95E+07	6.83E+06	5.17E+06	7.88E+07	0.	9.80E+07	0.	2.42E+05
TE129M	2.75E+07	1.01E+07	8.77E+06	7.93E+07	0.	9.55E+07	0.	4.31E+05
I--131	1.24E+05	1.76E+05	5.06E+07	2.27E+05	0.	3.32E+04	0.	1.05E+05
I--133	5.46E-03	9.26E-03	1.68E+00	1.17E-02	0.	6.73E-03	0.	2.85E-03
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	4.49E-05	4.14E-05	0.	1.57E-05	4.72E-06	9.69E-07	0.	1.84E-05
XE-135	1.55E-03	1.43E-03	0.	5.42E-04	1.63E-04	3.35E-05	0.	6.36E-04
XE-137	4.41E+00	5.94E+00	0.	1.53E+00	7.88E-01	7.92E-02	0.	2.08E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.17E+07	2.03E+07	0.	7.00E+06	3.43E+06	3.27E+05	0.	1.32E+07
CS-136	1.98E+05	7.80E+05	0.	4.34E+05	5.95E+04	6.86E+04	0.	5.62E+05
CS-137	1.66E+07	2.23E+07	0.	5.75E+06	2.96E+06	2.98E+05	0.	7.83E+05
BA-140	6.71E+05	8.28E+02	0.	2.06E+02	5.53E+02	2.60E+05	0.	4.32E+04
CE-141	2.91E+02	1.96E+02	0.	6.80E+01	0.	5.30E+05	0.	2.24E+01
CE-144	2.98E+04	1.22E+04	0.	5.00E+03	0.	7.02E+06	0.	1.58E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - MEAT (CONTAMINATED FEED) AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.22E+00	3.22E+00	4.07E+00	3.22E+00	3.22E+00	0.	3.22E+00
C---14	1.66E+03	1.66E+03	1.66E+03	1.25E+03	1.66E+03	1.66E+03	0.	1.66E+03
P---32	4.25E+05	2.67E+04	0.	0.	0.	4.78E+04	0.	1.63E+04
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	4.85E+04	0.	1.44E+04	0.	1.49E+05	0.	9.26E+03
FE--59	4.29E+05	1.02E+06	0.	0.	2.83E+05	3.36E+06	0.	3.87E+05
CO--58	0.	6.45E+04	0.	0.	0.	8.71E+05	0.	1.47E+05
CO--60	0.	6.13E+05	0.	0.	0.	7.36E+06	0.	1.40E+05
ZN--65	2.28E+06	7.25E+06	0.	4.85E+06	0.	4.57E+06	0.	3.28E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	4.61E-08	0.	0.	0.	2.16E-09	0.	1.60E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	3.71E+01	0.	0.	0.	0.	4.03E+00	0.	1.07E+00
KR--90	4.49E+00	0.	0.	0.	1.24E-01	4.55E-01	0.	1.11E+00
RB--86	0.	1.15E+05	0.	0.	0.	2.26E+04	0.	5.36E+04
SR--89	8.45E+05	0.	0.	0.	0.	9.17E+04	0.	2.43E+04
SR--90	1.24E+08	0.	0.	0.	3.41E+06	1.25E+07	0.	3.05E+07
Y---91	3.51E+03	0.	0.	0.	0.	1.35E+06	0.	9.37E+01
ZR--95	1.89E+04	9.90E+03	0.	8.64E+03	0.	3.68E+07	0.	5.84E+03
NB--95	2.91E+03	1.75E+03	0.	1.38E+03	0.	7.15E+06	0.	9.87E+02
RU-103	1.86E+05	0.	0.	5.54E+05	0.	1.45E+07	0.	8.31E+04
RU-106	2.27E+07	0.	0.	3.02E+07	0.	1.03E+09	0.	2.86E+06
AG110M	3.73E+04	3.45E+04	0.	6.79E+04	0.	1.41E+07	0.	2.05E+04
CD115M	0.	2.32E+03	0.	1.84E+03	0.	9.75E+04	0.	7.40E+01
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	1.19E+08	2.36E+06	6.93E+05	0.	5.06E+04	4.10E+07	0.	3.42E+05
SB-124	4.51E+04	8.51E+02	1.09E+02	0.	3.50E+04	1.28E+06	0.	1.78E+04
SB-125	4.12E+06	1.42E+06	1.12E+06	1.13E+07	1.50E+07	1.24E+07	0.	5.57E+05
TE127M	5.85E+06	2.04E+06	1.55E+06	2.36E+07	0.	2.93E+07	0.	7.23E+05
TE129M	2.02E+06	7.51E+05	6.49E+05	5.87E+05	0.	7.07E+06	0.	3.19E+05
I--131	2.04E+01	2.89E+01	8.32E+03	3.74E+01	0.	5.46E+00	0.	1.72E+01
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	2.27E-05	2.09E-05	0.	7.92E-06	2.38E-06	4.89E-07	0.	9.29E-05
XE-135	7.82E-04	7.21E-04	0.	2.73E-04	8.22E-05	1.69E-05	0.	3.21E-04
XE-137	2.12E+00	2.86E+00	0.	7.36E-01	3.79E-01	3.81E-02	0.	1.00E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	5.02E+06	1.21E+07	0.	2.99E+06	1.47E+06	1.40E+05	0.	5.65E+05
CS-136	6.39E+02	2.52E+03	0.	1.40E+03	1.92E+02	2.87E+02	0.	1.82E+03
CS-137	7.97E+06	1.07E+07	0.	2.77E+06	1.42E+06	1.43E+05	0.	3.75E+05
BA-140	2.01E+03	2.48E+00	0.	6.17E-01	1.65E+00	7.78E+02	0.	1.29E+02
CE-141	1.79E+01	1.21E+01	0.	4.19E+00	0.	3.26E+04	0.	1.38E+00
CE-144	1.09E+04	4.46E+03	0.	1.83E+03	0.	2.50E+06	0.	5.78E+02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FORAGE) AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.68E+01	1.68E+01	2.12E+01	1.68E+01	1.68E+01	0.	1.68E+01
C---14	3.95E+03	3.95E+03	3.95E+03	2.98E+03	3.95E+03	3.95E+03	0.	3.95E+03
P---32	6.41E+08	4.02E+07	0.	0.	0.	7.21E+07	0.	2.48E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.57E+05	0.	7.64E+04	0.	7.86E+05	0.	4.90E+04
FE--59	9.75E+05	2.31E+06	0.	0.	6.42E+05	7.64E+06	0.	8.80E+05
CO--58	0.	2.00E+05	0.	0.	0.	2.70E+06	0.	4.55E+05
CO--60	0.	6.41E+05	0.	0.	0.	7.69E+06	0.	1.46E+05
ZN--65	4.76E+07	1.51E+08	0.	1.01E+08	0.	9.52E+07	0.	6.84E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	4.00E-07	0.	0.	0.	1.87E-08	0.	1.39E-07
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	3.09E+03	0.	0.	0.	0.	3.36E+02	0.	8.88E+01
KR--90	7.43E+01	0.	0.	0.	2.84E-03	1.58E+00	0.	1.84E+01
RB--86	0.	9.23E+07	0.	0.	0.	1.82E+07	0.	4.30E+07
SR--89	7.05E+07	0.	0.	0.	0.	7.64E+06	0.	2.02E+06
SR--90	2.05E+09	0.	0.	0.	7.83E+04	4.35E+07	0.	5.06E+08
Y---91	3.84E+02	0.	0.	0.	0.	1.48E+05	0.	1.03E+01
ZR--95	8.72E+02	5.15E+02	0.	4.10E+02	0.	2.08E+06	0.	2.93E+02
NB--95	3.21E+03	1.93E+03	0.	1.52E+03	0.	7.89E+06	0.	1.09E+03
RU-103	4.35E+01	0.	0.	1.30E+02	0.	3.39E+03	0.	1.94E+01
RU-106	9.14E+02	0.	0.	1.22E+03	0.	4.14E+04	0.	1.15E+02
AG110M	1.87E+06	1.73E+06	0.	3.39E+06	0.	7.04E+08	0.	1.03E+05
CD115M	0.	4.19E+04	0.	3.32E+04	0.	1.76E+06	0.	1.34E+03
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	4.92E+07	9.76E+05	2.86E+05	0.	1.27E+05	3.11E+07	0.	1.46E+05
SB-124	8.29E+05	1.56E+04	2.00E+03	0.	6.43E+05	2.35E+07	0.	3.28E+05
SB-125	1.12E+06	1.33E+05	9.95E+04	9.97E+05	8.03E+07	7.77E+06	0.	2.01E+05
TE127M	1.76E+06	6.14E+05	4.65E+05	7.09E+06	0.	8.82E+06	0.	2.18E+05
TE129M	3.16E+06	1.17E+06	1.01E+06	9.15E+06	0.	1.10E+07	0.	4.97E+05
I--131	7.45E+06	1.05E+07	3.04E+09	1.36E+07	0.	1.99E+06	0.	6.27E+06
I--133	1.08E+05	1.84E+05	3.34E+07	2.31E+05	0.	1.34E+05	0.	5.65E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	8.28E-04	7.65E-04	0.	2.90E-04	8.71E-05	1.79E-05	0.	3.40E-04
XE-135	2.86E-02	2.64E-02	0.	1.00E-02	3.01E-03	6.18E-04	0.	1.17E-02
XE-137	8.16E+01	1.10E+02	0.	2.83E+01	1.46E+01	1.46E+00	0.	3.85E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	2.20E+08	5.31E+08	0.	1.31E+08	6.43E+07	6.13E+06	0.	2.46E+08
CS-136	9.53E+06	3.76E+07	0.	2.09E+07	2.07E+06	4.27E+06	0.	2.71E+07
CS-137	3.07E+08	4.12E+08	0.	1.05E+08	5.47E+07	5.50E+06	0.	1.45E+09
BA-140	1.37E+06	1.68E+03	0.	4.20E+02	1.13E+03	2.58E+05	0.	8.80E+04
CE-141	1.32E+03	8.84E+02	0.	3.07E+02	0.	2.39E+06	0.	1.01E+02
CE-144	9.59E+04	3.93E+04	0.	1.01E+04	0.	2.26E+07	0.	5.06E+03

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FEED) AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.66E+01	1.66E+01	2.10E+01	1.66E+01	1.66E+01	0.	1.66E+01
C---14	3.95E+03	3.95E+03	3.95E+03	2.98E+03	3.95E+03	3.95E+03	0.	3.95E+03
P---32	3.40E+06	2.13E+05	0.	0.	0.	3.83E+05	0.	1.32E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	9.70E+04	0.	2.89E+04	0.	2.97E+05	0.	1.85E+04
FE--59	1.04E+05	2.48E+05	0.	0.	6.88E+04	8.18E+05	0.	9.43E+04
CO--58	0.	3.64E+04	0.	0.	0.	4.91E+05	0.	8.29E+04
CO--60	0.	2.92E+05	0.	0.	0.	3.51E+06	0.	6.67E+05
ZN--65	1.92E+07	6.10E+07	0.	4.08E+07	0.	3.85E+07	0.	2.76E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.74E-07	0.	0.	0.	1.28E-08	0.	9.54E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	3.90E+02	0.	0.	0.	0.	4.23E+01	0.	1.12E+01
KR--90	3.69E+01	0.	0.	0.	1.54E-03	7.84E-01	0.	9.11E+00
RB--86	0.	1.33E+06	0.	0.	0.	2.63E+05	0.	6.22E+05
SR--89	8.87E+06	0.	0.	0.	0.	9.62E+05	0.	2.55E+05
SR--90	1.02E+09	0.	0.	0.	4.24E+04	2.16E+07	0.	2.51E+08
Y---91	5.00E+01	0.	0.	0.	0.	2.23E+04	0.	1.53E+00
ZR--95	8.18E+02	4.91E+02	0.	3.88E+02	0.	2.00E+06	0.	2.77E+02
NB--95	2.28E+02	1.37E+02	0.	1.08E+02	0.	5.61E+05	0.	7.75E+01
RU-103	3.91E+00	0.	0.	1.17E+01	0.	3.05E+02	0.	1.75E+00
RU-106	3.62E+02	0.	0.	4.81E+02	0.	1.64E+04	0.	4.55E+01
AG110M	7.09E+05	6.56E+05	0.	1.29E+06	0.	2.68E+08	0.	3.90E+05
CD115M	0.	4.32E+03	0.	3.42E+03	0.	1.82E+05	0.	1.38E+02
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.31E+07	4.58E+05	1.34E+05	0.	1.23E+05	2.30E+07	0.	7.23E+05
SB-124	1.28E+05	2.42E+03	3.10E+02	0.	9.94E+04	3.63E+06	0.	5.06E+04
SB-125	7.11E+05	1.38E+05	1.06E+05	1.07E+05	3.51E+07	4.02E+06	0.	1.17E+05
TE127M	5.25E+05	1.84E+05	1.39E+05	2.12E+06	0.	2.64E+06	0.	6.51E+04
TE129M	2.34E+05	8.67E+04	7.49E+04	6.77E+05	0.	8.16E+05	0.	3.68E+04
I--131	1.23E+03	1.73E+03	4.99E+05	2.24E+03	0.	3.20E+02	0.	1.03E+03
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	4.18E-04	3.86E-04	0.	1.46E-04	4.40E-05	9.03E-06	0.	1.72E-04
XE-135	1.44E-02	1.33E-02	0.	5.05E-03	1.52E-03	3.12E-04	0.	5.92E-03
XE-137	3.92E+01	5.28E+01	0.	1.36E+01	7.00E+00	7.04E-01	0.	1.85E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	9.42E+07	2.27E+08	0.	5.61E+07	2.75E+07	2.62E+06	0.	1.06E+08
CS-136	3.08E+04	1.22E+05	0.	6.75E+04	9.27E+03	1.38E+04	0.	8.75E+04
CS-137	1.47E+08	1.98E+08	0.	5.11E+07	2.03E+07	2.65E+06	0.	6.96E+07
BA-140	4.10E+03	5.04E+00	0.	1.25E+00	3.37E+00	7.97E+02	0.	2.64E+02
CE-141	8.11E+01	5.44E+01	0.	1.89E+01	0.	1.47E+05	0.	6.24E+00
CE-144	3.50E+04	1.44E+04	0.	5.87E+03	0.	8.24E+06	0.	1.05E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATED FORAGE)

AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.43E+01	3.43E+01	4.33E+01	3.43E+01	3.43E+01	0.	3.43E+01
C---14	3.95E+03	3.95E+03	3.95E+03	2.98E+03	3.95E+03	3.95E+03	0.	3.95E+03
P---32	8.28E+08	5.19E+07	0.	0.	0.	9.30E+07	0.	3.20E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	3.09E+04	0.	9.19E+03	0.	9.47E+04	0.	5.90E+03
FE--59	1.30E+04	3.08E+04	0.	0.	8.55E+03	1.02E+05	0.	1.17E+04
CO--58	0.	2.43E+04	0.	0.	0.	3.28E+05	0.	5.54E+04
CO--60	0.	7.70E+04	0.	0.	0.	9.23E+05	0.	1.75E+05
ZN--65	5.74E+06	1.82E+07	0.	1.22E+07	0.	1.15E+07	0.	8.24E+05
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	4.80E-08	0.	0.	0.	2.25E-09	0.	1.67E-08
KR--88	0.	4.84E-10	0.	0.	0.	0.	0.	2.57E-10
KR--89	6.63E+03	0.	0.	0.	0.	7.19E+02	0.	1.90E+02
KR--90	1.56E+02	0.	0.	0.	3.12E-04	3.30E+00	0.	3.86E+01
RB--86	0.	1.17E+07	0.	0.	0.	2.31E+06	0.	5.46E+05
SR--89	1.51E+08	0.	0.	0.	0.	1.64E+07	0.	4.33E+06
SR--90	4.30E+09	0.	0.	0.	8.60E+03	9.09E+07	0.	1.06E+09
Y---91	4.69E+01	0.	0.	0.	0.	1.80E+04	0.	1.25E+00
ZR--95	9.46E+01	5.58E+01	0.	4.45E+01	0.	2.25E+05	0.	3.17E+01
NB--95	3.97E+02	2.39E+02	0.	1.88E+02	0.	9.76E+05	0.	1.35E+02
RU-103	5.35E+00	0.	0.	1.60E+01	0.	4.18E+02	0.	2.39E+00
RU-106	1.10E+02	0.	0.	1.45E+02	0.	4.98E+03	0.	1.38E+01
AG110M	2.25E+05	2.08E+05	0.	4.09E+05	0.	8.48E+07	0.	1.24E+05
CD115M	0.	5.15E+03	0.	4.08E+03	0.	2.17E+05	0.	1.65E+02
SN-123	2.93E-02	4.83E-04	3.87E-04	0.	0.	4.22E-02	0.	7.22E-04
SN-126	5.89E+06	1.17E+05	3.43E+04	0.	1.41E+04	3.57E+06	0.	1.75E+05
SB-124	1.01E+05	1.91E+03	2.45E+02	0.	7.85E+04	2.86E+06	0.	4.00E+04
SB-125	1.35E+05	1.62E+04	1.21E+04	1.21E+05	9.64E+06	9.34E+05	0.	2.41E+04
TE127M	2.13E+05	7.45E+04	5.63E+04	8.58E+05	0.	1.06E+06	0.	2.64E+04
TE129M	3.91E+05	1.45E+05	1.26E+05	1.13E+06	0.	1.36E+06	0.	6.16E+04
I--131	1.02E+07	1.44E+07	4.15E+09	1.86E+07	0.	2.72E+06	0.	8.56E+05
I--133	4.27E+05	7.23E+05	1.31E+08	9.11E+05	0.	5.26E+05	0.	2.23E+05
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	2.49E-03	2.29E-03	0.	8.69E-04	2.61E-04	5.36E-05	0.	1.02E-03
XE-135	8.58E-02	7.92E-02	0.	3.00E-02	9.02E-03	1.85E-03	0.	3.52E-02
XE-137	2.45E+02	3.29E+02	0.	8.48E+01	4.37E+01	4.39E+00	0.	1.16E+02
XE-138	9.17E-05	1.81E-04	0.	1.33E-04	1.32E-05	7.72E-10	0.	8.98E-05
CS-134	6.62E+08	1.60E+09	0.	3.95E+08	1.93E+08	1.84E+07	0.	7.45E+08
CS-136	3.10E+07	1.22E+08	0.	6.80E+07	9.32E+06	1.39E+07	0.	8.80E+07
CS-137	9.19E+08	1.24E+09	0.	3.19E+08	1.64E+08	1.65E+07	0.	4.34E+08
BA-140	1.78E+05	2.19E+02	0.	5.46E+01	1.47E+02	3.30E+04	0.	1.19E+04
CE-141	1.63E+02	1.10E+02	0.	3.81E+01	0.	2.96E+05	0.	1.25E+01
CE-144	1.15E+04	4.73E+03	0.	1.94E+03	0.	2.72E+06	0.	6.12E+02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATE) FEED AGE GROUP - TEENAGER

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.38E+01	3.38E+01	4.27E+01	3.38E+01	3.38E+01	0.	3.38E+01
C---14	3.95E+03	3.95E+03	3.95E+03	2.98E+03	3.95E+03	3.95E+03	0.	3.95E+03
P---32	4.39E+06	2.75E+05	0.	0.	0.	4.94E+05	0.	1.70E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.17E+04	0.	3.48E+03	0.	3.58E+04	0.	2.23E+03
FE--59	1.39E+03	3.30E+03	0.	0.	9.15E+02	1.09E+04	0.	1.26E+03
CO--58	0.	4.43E+03	0.	0.	0.	5.98E+04	0.	1.01E+04
CO--60	0.	3.51E+04	0.	0.	0.	4.21E+05	0.	8.01E+04
ZN--65	2.32E+06	7.36E+06	0.	4.92E+06	0.	4.63E+06	0.	3.33E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	3.29E-08	0.	0.	0.	1.54E-09	0.	1.15E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	8.35E+02	0.	0.	0.	0.	9.06E+01	0.	2.40E+01
KR--90	7.74E+01	0.	0.	0.	1.78E-04	1.64E+00	0.	1.91E+01
RB--86	0.	1.69E+05	0.	0.	0.	3.33E+04	0.	7.89E+04
SR--89	1.90E+07	0.	0.	0.	0.	2.06E+06	0.	5.46E+05
SR--90	2.13E+09	0.	0.	0.	4.90E+03	4.51E+07	0.	5.27E+08
Y---91	7.09E+00	0.	0.	0.	0.	2.72E+03	0.	1.89E-01
ZR--95	9.90E+01	5.94E+01	0.	4.68E+01	0.	2.42E+05	0.	3.36E+01
NB--95	2.82E+01	1.70E+01	0.	1.34E+01	0.	6.93E+04	0.	9.58E+00
RU-103	4.81E-01	0.	0.	1.44E+00	0.	3.76E+01	0.	2.15E-01
RU-106	4.36E+01	0.	0.	5.79E+01	0.	1.97E+03	0.	5.48E+00
AG110M	8.54E+04	7.90E+04	0.	1.55E+05	0.	3.23E+07	0.	4.70E+04
CO115M	0.	5.31E+02	0.	4.21E+02	0.	2.23E+04	0.	1.70E+01
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.76E+06	5.50E+04	1.61E+04	0.	1.48E+04	2.77E+06	0.	8.69E+04
SB-124	1.57E+04	2.95E+02	3.78E+01	0.	1.21E+04	4.43E+05	0.	6.18E+03
SB-125	8.61E+04	1.67E+04	1.29E+04	1.30E+05	4.22E+06	4.85E+05	0.	1.42E+04
TE127M	6.37E+04	2.23E+04	1.68E+04	2.57E+05	0.	3.20E+05	0.	7.88E+03
TE129M	2.90E+04	1.07E+04	9.36E+03	8.37E+04	0.	1.01E+05	0.	4.55E+03
I--131	1.67E+03	2.36E+03	6.82E+05	3.06E+03	0.	4.47E+02	0.	1.41E+03
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	1.26E-03	1.16E-03	0.	4.39E-04	1.32E-04	2.71E-05	0.	5.15E-04
XE-135	4.33E-02	4.00E-02	0.	1.51E-02	4.55E-03	9.35E-04	0.	1.78E-02
XE-137	1.18E+02	1.58E+02	0.	4.08E+01	2.10E+01	2.11E+00	0.	5.55E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	2.83E+08	6.82E+08	0.	1.69E+08	8.26E+07	7.87E+06	0.	3.18E+08
CS-136	1.00E+05	3.95E+05	0.	2.20E+05	3.01E+04	4.49E+04	0.	2.84E+05
CS-137	4.42E+08	5.95E+08	0.	1.53E+08	7.89E+07	7.93E+06	0.	2.09E+08
BA-140	5.33E+02	6.56E-01	0.	1.64E-01	4.39E-01	1.04E+02	0.	3.43E+01
CE-141	1.00E+01	6.74E+00	0.	2.34E+00	0.	1.83E+04	0.	7.73E-01
CE-144	4.22E+03	1.73E+03	0.	7.05E+02	0.	9.93E+05	0.	2.24E+02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - INHALATION

AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.74E+01	1.74E+01	1.15E+01	1.74E+01	1.74E+01	0.	1.74E+01
C---14	1.45E+02	1.45E+02	1.45E+02	3.66E+01	1.45E+02	1.45E+02	0.	1.45E+02
P---32	1.41E+04	8.26E+02	0.	0.	0.	9.25E+02	0.	5.37E+02
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	4.24E+02	0.	1.05E+02	1.50E+04	8.28E+02	0.	6.74E+01
FE--59	1.26E+02	2.97E+05	0.	0.	1.09E+04	2.01E+03	0.	1.13E+02
CO--58	0.	3.52E+00	0.	0.	2.60E+04	8.37E+02	0.	6.19E+00
CO--60	0.	2.48E+01	0.	0.	1.60E+05	2.17E+03	0.	4.34E+01
ZN--65	3.47E+02	1.10E+03	0.	7.38E+02	9.33E+03	5.72E+02	0.	4.98E+02
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	0.	0.	0.	0.	0.	0.	0.	0.
KR--90	0.	0.	0.	0.	0.	0.	0.	0.
RB--86	0.	1.45E+03	0.	0.	0.	1.78E+02	0.	6.32E+02
SR--89	1.24E+03	0.	0.	0.	5.19E+04	3.90E+03	0.	3.56E+01
SR--90	3.79E+05	0.	0.	0.	3.43E+05	7.97E+03	0.	2.31E+04
Y---91	1.72E+03	0.	0.	0.	5.91E+04	4.13E+03	0.	4.59E+01
ZR--95	3.26E+02	7.59E+01	0.	5.80E+02	4.90E+04	1.33E+03	0.	6.89E+01
NB--95	3.94E+01	1.68E+01	0.	8.28E+01	1.35E+04	7.67E+02	0.	1.23E+01
RU-103	5.00E+00	0.	0.	6.24E+01	1.45E+04	9.76E+02	0.	2.02E+00
RU-106	2.67E+02	0.	0.	1.43E+03	3.37E+05	1.01E+04	0.	3.32E+01
AG110M	1.16E+02	1.07E+02	0.	2.11E+02	4.97E+04	3.24E+03	0.	6.36E+01
CD115M	0.	2.11E+03	0.	1.70E+03	1.51E+04	4.11E+03	0.	6.81E+01
SN-123	8.90E+02	1.49E+01	1.58E+01	0.	8.10E+04	3.45E+03	0.	2.94E+01
SN-126	1.35E+04	3.58E+02	1.05E+02	0.	1.00E+05	1.36E+03	0.	5.14E+02
SB-124	3.34E+02	6.30E+00	8.08E-01	0.	2.65E+04	4.35E+03	0.	1.33E+02
SB-125	7.07E+02	7.63E+00	6.28E-01	0.	2.35E+04	1.08E+03	0.	1.42E+02
TE127M	1.35E+02	6.01E+01	3.52E+01	4.90E+02	1.03E+04	1.60E+03	0.	1.68E+01
TE129M	3.80E+01	1.35E+01	1.25E+01	3.91E+02	4.17E+04	4.22E+03	0.	6.02E+03
I--131	1.05E+03	1.07E+03	3.56E+05	6.57E+02	0.	6.14E+01	0.	8.11E+02
I--133	3.88E+02	4.74E+02	1.16E+05	2.78E+02	0.	1.28E+02	0.	1.86E+02
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	0.	0.	0.	0.	0.	0.	0.	0.
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.44E+04	2.30E+04	0.	3.08E+03	2.75E+03	8.73E+01	0.	5.15E+03
CS-136	4.19E+02	1.57E+03	0.	9.15E+02	1.28E+02	1.25E+02	0.	1.19E+03
CS-137	2.00E+04	1.85E+04	0.	2.38E+03	2.32E+03	7.89E+01	0.	2.89E+03
BA-140	1.65E+02	1.08E-01	0.	1.79E-01	4.02E+04	2.30E+02	0.	9.76E+00
CE-141	7.25E+01	3.03E+01	0.	6.70E+01	1.19E+04	1.26E+03	0.	5.39E+00
CE-144	1.34E+04	4.20E+03	0.	9.08E+03	2.84E+05	9.25E+03	0.	7.17E+02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GROUND PLANE DEPOSITION AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	0.	0.	0.	0.	0.	0.	0.
C---14	0.	0.	0.	0.	0.	0.	0.	0.
P---32	0.	0.	0.	0.	0.	0.	0.	0.
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	5.14E+07	4.39E+07
FE--59	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	1.03E+07	8.73E+05
CO--58	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.41E+07	1.21E+07
CO--60	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	8.00E+08	6.80E+08
ZN--65	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.71E+07	2.36E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	1.13E+04	9.90E+03
KR--89	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	9.70E+02	8.08E+02
KR--90	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	7.29E-03	6.16E-03
RB--86	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	3.26E+05	2.86E+05
SR--89	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	7.97E+02	6.87E+02
SR--90	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	2.01E+05	1.70E+05
Y---91	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.86E+04	3.43E+04
ZR--95	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.86E+07	1.59E+07
NB--95	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	5.09E+06	4.33E+06
RU-103	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	4.07E+06	3.49E+05
RU-106	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.59E+07	1.33E+07
AG110M	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.32E+08	1.13E+08
CD115M	0.	0.	0.	0.	0.	0.	0.	0.
SN-123	0.	0.	0.	0.	0.	0.	4.35E+04	0.
SN-126	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.83E+09	1.64E+09
SB-124	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	2.19E+07	1.90E+07
SB-125	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	8.21E+07	7.27E+07
TE127M	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	3.09E+04	2.79E+04
TE129M	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.43E+06	1.22E+06
I--131	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	3.32E+05	2.73E+05
I--133	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	4.77E+04	3.92E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	1.01E+02	8.69E+01
XE-138	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.87E+03	6.01E+03
CS-134	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.58E+08	2.22E+08
CS-136	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	5.36E+06	4.73E+05
CS-137	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.81E+08	3.27E+08
BA-140	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	6.02E+06	5.30E+06
CE-141	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.88E+05	4.33E+05
CE-144	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	4.15E+06	3.59E+05

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - FRESH FRUITS AND VEGETABLES AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	4.18E+00	4.18E+00	2.76E+00	4.18E+00	4.18E+00	0.	4.18E+00
C---14	1.28E+03	1.28E+03	1.28E+03	3.23E+02	1.28E+03	1.28E+03	0.	1.28E+03
P---32	1.46E+07	9.13E+05	0.	0.	0.	1.64E+06	0.	5.64E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	6.17E+05	0.	1.84E+05	0.	1.89E+06	0.	1.18E+05
FE--59	4.60E+05	1.09E+06	0.	0.	3.03E+05	3.60E+06	0.	4.15E+05
CO--58	0.	2.14E+05	0.	0.	0.	1.28E+06	0.	6.47E+05
CO--60	0.	7.36E+05	0.	0.	0.	4.07E+06	0.	2.21E+05
ZN--65	8.31E+05	2.64E+06	0.	1.76E+06	0.	1.66E+06	0.	1.19E+05
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	1.19E-08	0.	0.	0.	5.57E-10	0.	4.14E-09
KR--88	0.	2.13E-01	0.	0.	0.	0.	0.	1.13E-01
KR--89	6.61E+03	0.	0.	0.	0.	2.47E+02	0.	1.89E+02
KR--90	9.96E+01	0.	0.	0.	0.	1.86E+00	0.	2.53E+01
RB--86	0.	1.69E+06	0.	0.	0.	3.32E+05	0.	7.85E+05
SR--89	1.50E+08	0.	0.	0.	0.	5.61E+06	0.	4.31E+05
SR--90	2.74E+09	0.	0.	0.	0.	5.12E+07	0.	6.96E+08
Y---91	6.56E+04	0.	0.	0.	0.	8.71E+06	0.	1.75E+03
ZR--95	1.25E+04	3.03E+03	0.	1.87E+03	0.	3.31E+06	0.	2.71E+03
NB--95	1.94E+03	8.26E+02	0.	3.41E+02	0.	1.43E+06	0.	6.07E+02
RU-103	7.03E+04	0.	0.	7.33E+04	0.	1.85E+06	0.	2.84E+04
RU-106	1.66E+06	0.	0.	7.44E+05	0.	2.59E+07	0.	2.07E+05
AG110M	2.35E+04	2.17E+04	0.	4.27E+04	0.	8.87E+06	0.	1.29E+04
CD115M	0.	2.03E+05	0.	1.61E+05	0.	8.53E+06	0.	6.48E+03
SN-123	5.43E-07	6.80E-09	7.17E-09	0.	0.	2.70E-07	0.	1.34E-08
SN-126	1.20E+07	2.38E+05	6.98E+04	0.	6.29E+04	1.18E+07	0.	3.76E+05
SB-124	3.17E+05	5.97E+03	7.65E+02	0.	2.46E+05	8.96E+06	0.	1.25E+05
SB-125	1.65E+06	3.67E+05	3.77E+05	1.28E+06	3.25E+07	4.05E+06	0.	2.41E+05
TE127M	1.30E+06	4.47E+05	3.66E+05	5.03E+06	0.	7.48E+06	0.	1.66E+05
TE129M	5.79E+06	1.61E+06	1.85E+06	5.63E+06	0.	6.97E+06	0.	8.95E+05
I--131	1.96E+06	2.01E+06	6.54E+08	1.23E+06	0.	1.72E+05	0.	1.52E+05
I--133	5.73E+04	7.07E+04	1.71E+07	4.13E+04	0.	2.87E+04	0.	2.78E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	4.51E-05	4.16E-05	0.	1.58E-05	4.74E-06	9.74E-07	0.	1.85E-05
XE-135	1.56E-03	1.44E-03	0.	5.44E-04	1.64E-04	3.36E-05	0.	6.39E-04
XE-137	1.25E+01	1.21E+01	0.	1.48E+00	1.41E+00	7.35E-02	0.	1.80E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	3.08E+07	5.19E+07	0.	6.60E+06	5.76E+06	2.81E+05	0.	1.10E+07
CS-136	4.27E+05	1.69E+05	0.	9.38E+05	1.29E+05	1.92E+05	0.	1.21E+05
CS-137	4.68E+07	4.53E+07	0.	5.57E+05	5.31E+06	2.76E+05	0.	6.75E+06
BA-140	5.37E+06	4.93E+03	0.	5.64E+02	2.81E+03	6.58E+06	0.	3.15E+05
CE-141	3.65E+03	1.83E+03	0.	2.85E+02	0.	2.29E+06	0.	2.72E+02
CE-144	2.80E+05	8.78E+04	0.	1.59E+04	0.	2.28E+07	0.	1.49E+04

01/18/79

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - STORED FRUITS AND VEGETABLES AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	8.29E+01	8.29E+01	5.47E+01	8.29E+01	8.29E+01	0.	8.29E+01
C---14	2.56E+04	2.56E+04	2.56E+04	6.45E+03	2.56E+04	2.56E+04	0.	2.56E+04
P---32	1.67E+07	1.05E+06	0.	0.	0.	1.88E+06	0.	6.46E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	1.08E+07	0.	3.22E+06	0.	3.32E+07	0.	2.07E+05
FE--59	3.70E+06	8.79E+05	0.	0.	2.44E+06	2.90E+07	0.	3.35E+05
CO--58	0.	2.41E+06	0.	0.	0.	1.43E+07	0.	7.27E+05
CO--60	0.	1.44E+07	0.	0.	0.	7.97E+07	0.	4.32E+07
ZN--65	1.40E+07	4.46E+07	0.	2.98E+07	0.	2.81E+07	0.	2.02E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.38E-07	0.	0.	0.	1.11E-08	0.	8.27E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	5.89E+04	0.	0.	0.	0.	2.20E+03	0.	1.69E+03
KR--90	1.99E+03	0.	0.	0.	0.	3.86E+01	0.	5.03E+02
RB--86	0.	3.78E+06	0.	0.	0.	7.46E+05	0.	1.76E+05
SR--89	1.34E+09	0.	0.	0.	0.	5.00E+07	0.	3.84E+07
SR--90	5.47E+10	0.	0.	0.	0.	1.06E+09	0.	1.39E+10
Y---91	6.56E+05	0.	0.	0.	0.	8.71E+07	0.	1.75E+04
ZR--95	1.51E+05	4.02E+04	0.	2.32E+04	0.	4.91E+07	0.	3.47E+04
NB--95	1.20E+04	5.14E+03	0.	2.12E+03	0.	8.89E+06	0.	3.77E+03
RU-103	5.06E+05	0.	0.	5.27E+05	0.	1.33E+07	0.	2.04E+05
RU-106	2.97E+07	0.	0.	1.33E+07	0.	4.62E+08	0.	3.70E+06
AG110M	4.02E+05	3.72E+05	0.	7.30E+05	0.	1.52E+08	0.	2.21E+05
CD115M	0.	1.57E+06	0.	1.24E+06	0.	6.59E+07	0.	5.01E+04
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.41E+08	4.79E+06	1.40E+06	0.	2.12E+06	3.51E+08	0.	8.05E+06
SB-124	3.21E+06	6.06E+04	7.76E+03	0.	2.49E+06	9.09E+07	0.	1.27E+05
SB-125	3.52E+07	7.97E+06	8.20E+06	2.79E+07	6.23E+08	8.09E+07	0.	5.09E+05
TE127M	1.76E+07	6.06E+05	4.97E+06	6.81E+07	0.	1.02E+08	0.	2.24E+06
TE129M	3.48E+07	9.70E+06	1.11E+07	3.38E+07	0.	4.19E+07	0.	5.38E+05
I--131	2.44E+05	2.50E+05	8.14E+07	1.53E+05	0.	2.14E+04	0.	1.89E+05
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	9.06E-04	8.36E-04	0.	3.17E-04	9.53E-05	1.96E-05	0.	3.72E-04
XE-135	3.13E-02	2.89E-02	0.	1.09E-02	3.29E-03	6.75E-04	0.	1.28E-02
XE-137	2.48E+02	2.40E+02	0.	2.95E+01	2.82E+01	1.47E+00	0.	3.58E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	5.84E+08	9.83E+08	0.	1.25E+08	1.09E+08	5.32E+06	0.	2.09E+08
CS-135	3.68E+05	1.45E+06	0.	8.07E+05	1.11E+05	1.65E+05	0.	1.04E+05
CS-137	9.33E+08	9.03E+08	0.	1.11E+08	1.06E+08	5.50E+06	0.	1.35E+08
BA-140	4.40E+06	4.08E+03	0.	4.62E+02	2.30E+03	6.35E+06	0.	2.58E+05
CE-141	2.07E+04	1.04E+04	0.	1.62E+03	0.	1.30E+07	0.	1.54E+03
CE-144	4.86E+06	1.52E+06	0.	2.79E+05	0.	3.95E+08	0.	2.59E+05

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - MEAT (CONTAMINATED FORAGE) AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.95E+00	3.95E+00	2.61E+00	3.95E+00	3.95E+00	0.	3.95E+00
C---14	3.13E+03	3.13E+03	3.13E+03	7.88E+02	3.13E+03	3.13E+03	0.	3.13E+03
P---32	5.05E+07	3.17E+06	0.	0.	0.	5.68E+06	0.	1.96E+06
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	8.09E+04	0.	2.41E+04	0.	2.48E+05	0.	1.55E+04
FE--59	2.52E+06	5.99E+06	0.	0.	1.66E+06	1.98E+07	0.	2.20E+06
CO--58	0.	4.16E+05	0.	0.	0.	2.47E+06	0.	1.25E+05
CO--60	0.	1.59E+06	0.	0.	0.	8.80E+06	0.	4.77E+05
ZN--65	3.57E+06	1.13E+07	0.	7.57E+06	0.	7.13E+06	0.	5.12E+05
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	4.23E-08	0.	0.	0.	1.98E-09	0.	1.47E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	5.58E+02	0.	0.	0.	0.	2.08E+01	0.	1.60E+01
KR--90	9.43E+00	0.	0.	0.	0.	6.30E-01	0.	2.39E+00
RB--86	0.	5.02E+06	0.	0.	0.	9.89E+05	0.	2.34E+05
SR--89	1.27E+07	0.	0.	0.	0.	4.74E+05	0.	3.63E+05
SR--90	2.60E+08	0.	0.	0.	0.	1.74E+07	0.	6.59E+07
Y---91	4.38E+04	0.	0.	0.	0.	5.81E+06	0.	1.17E+03
ZR--95	1.08E+05	3.44E+04	0.	1.73E+04	0.	4.99E+07	0.	2.77E+04
NB--95	6.95E+04	2.97E+04	0.	1.22E+04	0.	5.13E+07	0.	2.18E+04
RU-103	3.73E+06	0.	0.	3.89E+06	0.	9.80E+07	0.	1.51E+06
RU-106	1.08E+08	0.	0.	4.82E+07	0.	1.68E+09	0.	1.34E+07
AG110M	6.20E+04	5.73E+04	0.	1.13E+05	0.	2.34E+07	0.	3.41E+04
CD115M	0.	1.42E+04	0.	1.13E+04	0.	5.96E+05	0.	4.53E+02
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	1.61E+08	3.19E+06	9.35E+05	0.	5.46E+04	5.34E+07	0.	4.60E+05
SB-124	1.84E+05	3.47E+03	4.45E+02	0.	1.43E+05	5.21E+06	0.	7.28E+04
SB-125	7.68E+06	2.03E+06	2.10E+05	7.15E+06	2.17E+07	9.04E+06	0.	1.04E+05
TE127M	1.29E+07	4.42E+06	3.63E+06	4.97E+07	0.	7.41E+07	0.	1.64E+05
TE129M	5.14E+07	1.43E+07	1.64E+07	5.00E+07	0.	6.19E+07	0.	7.96E+06
I--131	2.29E+05	2.35E+05	7.64E+07	1.44E+05	0.	2.01E+04	0.	1.77E+05
I--133	1.02E-02	1.25E-02	3.02E+00	7.35E-03	0.	5.08E-03	0.	4.92E-03
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	2.83E-05	2.61E-05	0.	9.90E-06	2.98E-06	6.11E-07	0.	1.15E-05
XE-135	9.77E-04	9.02E-04	0.	3.42E-04	1.03E-04	2.11E-05	0.	4.01E-04
XE-137	8.12E+00	7.86E+00	0.	9.65E-01	9.21E-01	4.79E-02	0.	1.17E+00
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	2.06E+07	3.47E+07	0.	4.42E+06	3.86E+06	1.88E+05	0.	7.38E+05
CS-135	1.25E+05	4.92E+05	0.	2.74E+05	3.75E+04	5.59E+04	0.	3.54E+05
CS-137	3.05E+07	2.95E+07	0.	3.63E+06	3.46E+06	1.80E+05	0.	4.40E+06
BA-140	1.24E+06	1.08E+03	0.	1.30E+02	6.46E+02	1.71E+05	0.	7.25E+04
CE-141	5.48E+02	2.74E+02	0.	4.29E+01	0.	3.44E+05	0.	4.08E+01
CE-144	5.57E+04	1.75E+04	0.	3.15E+03	0.	4.53E+06	0.	2.97E+03

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - MEAT (CONTAMINATED FEED) AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.89E+00	3.89E+00	2.57E+00	3.89E+00	3.89E+00	0.	3.89E+00
C---14	3.13E+03	3.13E+03	3.13E+03	7.88E+02	3.13E+03	3.13E+03	0.	3.13E+03
P---32	2.60E+05	1.68E+04	0.	0.	0.	3.02E+04	0.	1.04E+04
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	3.06E+04	0.	9.10E+03	0.	9.36E+04	0.	5.84E+03
FE--59	2.70E+05	6.42E+05	0.	0.	1.78E+05	2.12E+06	0.	2.44E+05
CO--58	0.	7.58E+04	0.	0.	0.	4.51E+05	0.	2.29E+05
CO--60	0.	7.25E+05	0.	0.	0.	4.01E+06	0.	2.17E+05
ZN--65	1.44E+06	4.57E+06	0.	3.05E+06	0.	2.88E+06	0.	2.07E+05
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.91E-08	0.	0.	0.	1.36E-09	0.	1.01E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	7.02E+01	0.	0.	0.	0.	2.62E+00	0.	2.01E+00
KR--90	4.60E+00	0.	0.	0.	0.	3.12E-01	0.	1.19E+00
RU--86	0.	7.25E+04	0.	0.	0.	1.43E+04	0.	3.38E+04
SR--89	1.60E+06	0.	0.	0.	0.	5.97E+04	0.	4.58E+04
SR--90	1.29E+08	0.	0.	0.	0.	8.61E+06	0.	3.27E+07
Y---91	6.61E+03	0.	0.	0.	0.	8.78E+05	0.	1.76E+02
ZR--95	3.25E+04	1.20E+04	0.	5.45E+03	0.	1.91E+07	0.	9.19E+03
NB--95	4.94E+03	2.11E+03	0.	8.68E+02	0.	3.65E+06	0.	1.55E+03
RU-103	3.35E+05	0.	0.	3.50E+05	0.	8.80E+06	0.	1.36E+05
RU-105	4.27E+07	0.	0.	1.91E+07	0.	6.63E+08	0.	5.31E+06
AG110M	2.36E+04	2.18E+04	0.	4.28E+04	0.	8.89E+06	0.	1.30E+04
CD115M	0.	1.46E+03	0.	1.16E+03	0.	6.15E+04	0.	4.67E+01
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	7.51E+07	1.49E+06	4.36E+05	0.	3.19E+04	2.58E+07	0.	2.16E+06
SB-124	2.85E+04	5.37E+02	6.88E+01	0.	2.21E+04	8.06E+05	0.	1.13E+04
SB-125	7.56E+06	2.03E+06	2.10E+06	7.14E+06	9.48E+06	8.01E+06	0.	1.01E+05
TE127M	3.85E+06	1.32E+06	1.08E+05	1.48E+07	0.	2.22E+07	0.	4.90E+05
TE129M	3.81E+06	1.06E+06	1.22E+06	3.70E+06	0.	4.58E+06	0.	5.89E+05
I--131	3.77E+01	3.86E+01	1.26E+04	2.36E+01	0.	3.31E+00	0.	2.91E+01
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	1.43E-05	1.32E-05	0.	5.00E-06	1.50E-06	3.09E-07	0.	5.86E-05
XE-135	4.93E-04	4.55E-04	0.	1.72E-04	5.18E-05	1.06E-05	0.	2.02E-04
XE-137	3.90E+00	3.78E+00	0.	4.64E-01	4.43E-01	2.30E-02	0.	5.63E-01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	8.81E+06	1.48E+07	0.	1.89E+06	1.65E+06	8.02E+04	0.	3.15E+05
CS-136	4.03E+02	1.59E+03	0.	8.85E+02	1.21E+02	1.81E+02	0.	1.15E+03
CS-137	1.47E+07	1.42E+07	0.	1.74E+06	1.66E+06	8.65E+04	0.	2.12E+05
BA-140	3.70E+03	3.26E+00	0.	3.89E-01	1.94E+00	5.11E+02	0.	2.17E+02
CE-141	3.38E+01	1.69E+01	0.	2.04E+00	0.	2.12E+04	0.	2.52E+00
CE-144	2.04E+04	6.37E+03	0.	1.15E+03	0.	1.66E+06	0.	1.08E+03

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FORAGE) AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	2.65E+01	2.65E+01	1.75E+01	2.65E+01	2.65E+01	0.	2.65E+01
C---14	9.76E+03	9.76E+03	9.76E+03	2.46E+03	9.76E+03	9.76E+03	0.	9.76E+03
P---32	5.29E+08	3.32E+07	0.	0.	0.	5.95E+07	0.	2.05E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.12E+05	0.	6.30E+04	0.	6.49E+05	0.	4.04E+04
FE--59	8.04E+05	1.91E+06	0.	0.	5.30E+05	6.30E+06	0.	7.25E+05
CO--58	0.	3.07E+05	0.	0.	0.	1.83E+06	0.	9.26E+05
CO--60	0.	9.91E+05	0.	0.	0.	5.48E+06	0.	2.97E+05
ZN--65	3.93E+07	1.25E+08	0.	8.34E+07	0.	7.85E+07	0.	5.64E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	3.30E-07	0.	0.	0.	1.54E-08	0.	1.15E-07
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	7.66E+03	0.	0.	0.	0.	2.86E+02	0.	2.19E+02
KR--90	1.01E+02	0.	0.	0.	0.	1.36E+00	0.	2.57E+01
RB--86	0.	7.61E+07	0.	0.	0.	1.50E+07	0.	3.55E+07
SR--89	1.74E+08	0.	0.	0.	0.	6.51E+06	0.	4.99E+05
SR--90	2.79E+09	0.	0.	0.	0.	3.74E+07	0.	7.08E+08
Y---91	9.46E+02	0.	0.	0.	0.	1.26E+05	0.	2.52E+01
ZR--95	1.95E+03	8.11E+02	0.	3.39E+02	0.	1.39E+06	0.	5.99E+02
NB--95	7.14E+03	3.04E+03	0.	1.25E+03	0.	5.27E+06	0.	2.24E+03
RU-103	1.03E+02	0.	0.	1.07E+02	0.	2.69E+03	0.	4.15E+01
RU-106	2.24E+03	0.	0.	1.00E+03	0.	3.49E+04	0.	2.79E+02
AG110M	1.54E+06	1.42E+06	0.	2.80E+06	0.	5.81E+08	0.	8.46E+05
CD115M	0.	3.45E+04	0.	2.74E+04	0.	1.45E+06	0.	1.10E+03
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	4.06E+07	8.05E+05	2.36E+05	0.	1.05E+05	2.56E+07	0.	1.21E+06
SB-124	6.84E+05	1.29E+04	1.65E+03	0.	5.31E+05	1.94E+07	0.	2.70E+05
SB-125	1.50E+06	2.40E+05	2.43E+05	8.23E+05	6.62E+07	6.43E+06	0.	2.42E+05
TE127M	1.51E+06	5.21E+05	4.26E+05	5.84E+06	0.	8.72E+06	0.	1.93E+05
TE129M	7.76E+06	2.16E+06	2.48E+06	7.55E+05	0.	9.34E+06	0.	1.20E+05
I--131	1.80E+07	1.84E+07	5.99E+09	1.13E+07	0.	1.58E+06	0.	1.39E+07
I--133	2.64E+05	3.25E+05	7.84E+07	1.91E+05	0.	1.32E+05	0.	1.28E+05
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	6.83E-04	6.31E-04	0.	2.39E-04	7.18E-05	1.48E-05	0.	2.80E-04
XE-135	2.36E-02	2.18E-02	0.	8.25E-03	2.48E-03	5.10E-04	0.	9.68E-03
XE-137	1.96E+02	1.90E+02	0.	2.33E+01	2.23E+01	1.16E+00	0.	2.83E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	5.06E+08	8.51E+08	0.	1.08E+08	9.46E+07	4.61E+06	0.	1.81E+08
CS-136	7.86E+06	3.10E+07	0.	1.73E+07	2.37E+06	3.53E+06	0.	2.23E+07
CS-137	7.37E+08	7.14E+08	0.	8.77E+07	8.36E+07	4.35E+06	0.	1.06E+08
BA-140	3.30E+06	2.89E+03	0.	3.45E+02	1.72E+03	2.19E+05	0.	1.93E+05
CE-141	3.24E+03	1.62E+03	0.	2.53E+02	0.	2.03E+06	0.	2.41E+02
CE-144	2.34E+05	7.34E+04	0.	1.33E+04	0.	1.91E+07	0.	1.25E+04

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FEED) AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	2.62E+01	2.62E+01	1.73E+01	2.62E+01	2.62E+01	0.	2.62E+01
C---14	9.76E+03	9.76E+03	9.76E+03	2.46E+03	9.76E+03	9.76E+03	0.	9.76E+03
P---32	2.81E+06	1.76E+05	0.	0.	0.	3.16E+05	0.	1.09E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	8.00E+04	0.	2.38E+04	0.	2.45E+05	0.	1.53E+04
FE--59	8.61E+04	2.04E+05	0.	0.	5.68E+04	6.75E+05	0.	7.78E+04
CO--58	0.	5.60E+04	0.	0.	0.	3.33E+05	0.	1.69E+05
CO--60	0.	4.52E+05	0.	0.	0.	2.50E+06	0.	1.35E+05
ZN--65	1.59E+07	5.04E+07	0.	3.37E+07	0.	3.17E+07	0.	2.28E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.26E-07	0.	0.	0.	1.06E-08	0.	7.87E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	9.65E+02	0.	0.	0.	0.	3.60E+01	0.	2.76E+01
KR--90	5.03E+01	0.	0.	0.	0.	6.73E-01	0.	1.27E+01
RB--86	0.	1.10E+06	0.	0.	0.	2.17E+05	0.	5.13E+05
SR--89	2.20E+07	0.	0.	0.	0.	8.20E+05	0.	6.29E+05
SR--90	1.39E+09	0.	0.	0.	0.	1.85E+07	0.	3.51E+08
Y---91	1.43E+02	0.	0.	0.	0.	1.90E+04	0.	3.81E+00
ZR--95	1.81E+03	7.73E+02	0.	3.19E+02	0.	1.33E+06	0.	5.68E+02
NB--95	5.07E+02	2.16E+02	0.	8.91E+01	0.	3.74E+05	0.	1.59E+02
RU-103	9.22E+00	0.	0.	9.61E+00	0.	2.42E+02	0.	3.73E+00
RU-106	8.88E+02	0.	0.	3.97E+02	0.	1.38E+04	0.	1.11E+02
AG110M	5.85E+05	5.41E+05	0.	1.06E+06	0.	2.21E+08	0.	3.22E+05
CD115M	0.	3.56E+03	0.	2.83E+03	0.	1.50E+05	0.	1.14E+02
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	1.91E+07	3.78E+05	1.11E+05	0.	1.01E+05	1.89E+07	0.	5.97E+05
SB-124	1.06E+05	1.99E+03	2.56E+02	0.	8.20E+04	2.99E+06	0.	4.18E+04
SB-125	1.20E+06	2.53E+05	2.59E+05	8.81E+05	2.90E+07	3.34E+06	0.	1.79E+05
TE127M	4.52E+05	1.55E+05	1.27E+05	1.75E+06	0.	2.61E+06	0.	5.77E+04
TE129M	5.74E+05	1.60E+05	1.83E+05	5.59E+05	0.	6.92E+05	0.	8.89E+04
I--131	2.96E+03	3.03E+03	9.85E+05	1.85E+03	0.	2.59E+02	0.	2.29E+03
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	3.45E-04	3.19E-04	0.	1.21E-04	3.63E-05	7.45E-06	0.	1.42E-04
XE-135	1.19E-02	1.10E-02	0.	4.15E-03	1.25E-03	2.57E-04	0.	4.88E-03
XE-137	9.44E+01	9.13E+01	0.	1.12E+01	1.07E+01	5.57E-01	0.	1.36E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	2.16E+08	3.64E+08	0.	4.63E+07	4.04E+07	1.97E+06	0.	7.74E+07
CS-136	2.54E+04	1.00E+05	0.	5.58E+04	7.65E+03	1.14E+04	0.	7.22E+04
CS-137	3.55E+08	3.43E+08	0.	4.22E+07	4.02E+07	2.09E+06	0.	5.11E+07
BA-140	9.87E+03	8.67E+00	0.	1.04E+00	5.10E+00	6.75E+02	0.	5.80E+02
CE-141	2.00E+02	9.98E+01	0.	1.55E+01	0.	1.25E+05	0.	1.49E+01
CE-144	8.56E+04	2.68E+04	0.	4.84E+03	0.	6.96E+06	0.	4.50E+03

DOSE FACTORS FOR GASEOUS DISCHARGES

BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATED FORAGE) AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	5.42E+01	5.42E+01	3.58E+01	5.42E+01	5.42E+01	0.	5.42E+01
C---14	9.76E+03	9.76E+03	9.76E+03	2.46E+03	9.76E+03	9.76E+03	0.	9.76E+03
P---32	6.83E+08	4.28E+07	0.	0.	0.	7.68E+07	0.	2.64E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.55E+04	0.	7.59E+03	0.	7.81E+04	0.	4.87E+03
FE--59	1.07E+04	2.54E+04	0.	0.	7.05E+03	8.38E+04	0.	9.66E+03
CO--58	0.	3.74E+04	0.	0.	0.	2.22E+05	0.	1.13E+05
CO--60	0.	1.19E+05	0.	0.	0.	6.58E+05	0.	3.57E+05
ZN--65	4.73E+06	1.50E+07	0.	1.01E+07	0.	9.46E+06	0.	6.80E+05
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	3.96E-08	0.	0.	0.	1.85E-09	0.	1.38E-08
KR--88	0.	4.00E-10	0.	0.	0.	0.	0.	2.12E-10
KR--89	1.64E+04	0.	0.	0.	0.	6.13E+02	0.	4.70E+02
KR--90	2.13E+02	0.	0.	0.	0.	2.83E+00	0.	5.40E+01
RB--86	0.	9.66E+06	0.	0.	0.	1.90E+06	0.	4.50E+05
SR--89	3.74E+08	0.	0.	0.	0.	1.40E+07	0.	1.07E+07
SR--90	5.86E+09	0.	0.	0.	0.	7.81E+07	0.	1.49E+09
Y---91	1.16E+02	0.	0.	0.	0.	1.53E+04	0.	3.08E+00
ZR--95	2.10E+02	8.78E+01	0.	3.67E+01	0.	1.51E+05	0.	6.49E+01
NB--95	8.82E+02	3.76E+02	0.	1.55E+02	0.	6.51E+05	0.	2.76E+02
RU-103	1.26E+01	0.	0.	1.32E+01	0.	3.32E+02	0.	5.11E+00
RU-106	2.70E+02	0.	0.	1.21E+02	0.	4.20E+03	0.	3.35E+01
AG110M	1.85E+05	1.72E+05	0.	3.37E+05	0.	7.00E+07	0.	1.02E+05
CD115M	0.	4.25E+03	0.	3.37E+03	0.	1.79E+05	0.	1.36E+02
SN-123	7.23E-02	9.05E-04	9.55E-04	0.	0.	3.59E-02	0.	1.78E-03
SN-126	4.87E+06	9.66E+04	2.83E+04	0.	1.16E+04	2.94E+06	0.	1.45E+05
SB-124	8.35E+04	1.58E+03	2.02E+02	0.	6.48E+04	2.36E+06	0.	3.30E+04
SB-125	1.80E+05	2.90E+04	2.93E+04	9.96E+04	7.96E+06	7.74E+05	0.	2.92E+04
TE127M	1.83E+05	6.31E+04	5.16E+04	7.08E+05	0.	1.05E+06	0.	2.34E+04
TE129M	9.61E+05	2.68E+05	3.00E+05	9.34E+05	0.	1.16E+06	0.	1.48E+05
I--131	2.46E+07	2.52E+07	8.18E+09	1.54E+07	0.	2.15E+06	0.	1.90E+07
I--133	1.04E+06	1.28E+06	3.09E+08	7.51E+05	0.	5.19E+05	0.	5.03E+05
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	2.05E-03	1.89E-03	0.	7.17E-04	2.15E-04	4.43E-05	0.	8.41E-04
XE-135	7.08E-02	8.54E-02	0.	2.48E-02	7.44E-03	1.53E-03	0.	2.90E-02
XE-137	5.89E+02	5.70E+02	0.	7.00E+01	6.68E+01	3.47E+00	0.	8.49E+01
XE-138	7.56E-05	1.49E-04	0.	1.10E-04	1.09E-05	6.37E-10	0.	7.41E-05
CS-134	1.52E+09	2.56E+09	0.	3.25E+08	2.84E+08	1.38E+07	0.	5.44E+08
CS-136	2.55E+07	1.01E+08	0.	5.61E+07	7.69E+06	1.15E+07	0.	7.26E+07
CS-137	2.21E+09	2.14E+09	0.	2.63E+08	2.51E+08	1.30E+07	0.	3.19E+08
BA-140	4.29E+05	3.76E+02	0.	4.51E+01	2.24E+02	2.79E+04	0.	2.52E+04
CE-141	4.01E+02	2.01E+02	0.	3.14E+01	0.	2.52E+05	0.	2.99E+01
CE-144	2.82E+04	8.84E+03	0.	1.60E+03	0.	2.30E+06	0.	1.50E+03

01/18/79

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATED FEED) AGE GROUP - CHILD

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	5.34E+01	5.34E+01	3.53E+01	5.34E+01	5.34E+01	0.	5.34E+01
C---14	9.76E+03	9.76E+03	9.76E+03	2.46E+03	9.76E+03	9.76E+03	0.	9.76E+03
P---32	3.62E+06	2.27E+05	0.	0.	0.	4.07E+05	0.	1.40E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	9.63E+03	0.	2.87E+03	0.	2.95E+04	0.	1.84E+03
FE--59	1.15E+03	2.72E+03	0.	0.	7.55E+02	8.98E+03	0.	1.04E+03
CO--58	0.	6.82E+03	0.	0.	0.	4.05E+04	0.	2.06E+04
CO--60	0.	5.42E+04	0.	0.	0.	3.00E+05	0.	1.63E+05
ZN--65	1.91E+06	6.07E+06	0.	4.05E+06	0.	3.82E+06	0.	2.75E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.72E-08	0.	0.	0.	1.27E-09	0.	9.45E-09
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	2.07E+03	0.	0.	0.	0.	7.72E+01	0.	5.92E+01
KR--90	1.06E+02	0.	0.	0.	0.	1.41E+00	0.	2.68E+01
RB--86	0.	1.40E+05	0.	0.	0.	2.75E+04	0.	6.51E+04
SR--89	4.71E+07	0.	0.	0.	0.	1.76E+06	0.	1.35E+06
SR--90	2.91E+09	0.	0.	0.	0.	3.87E+07	0.	7.37E+08
Y---91	1.75E+01	0.	0.	0.	0.	2.32E+03	0.	4.65E-01
ZR--95	2.20E+02	9.35E+01	0.	3.87E+01	0.	1.61E+05	0.	6.87E+01
NB--95	6.27E+01	2.67E+01	0.	1.10E+01	0.	4.63E+04	0.	1.96E+01
RU-103	1.14E+00	0.	0.	1.18E+00	0.	2.98E+01	0.	4.59E-01
RU-106	1.07E+02	0.	0.	4.78E+01	0.	1.66E+03	0.	1.33E+01
AG110M	7.05E+04	6.52E+04	0.	1.28E+05	0.	2.66E+07	0.	3.08E+04
CD115M	0.	4.38E+02	0.	3.47E+02	0.	1.84E+04	0.	1.40E+01
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.28E+06	4.54E+04	1.33E+04	0.	1.22E+04	2.28E+06	0.	7.17E+04
SB-124	1.29E+04	2.44E+02	3.12E+01	0.	1.00E+04	3.65E+05	0.	5.10E+03
SB-125	1.45E+05	3.08E+04	3.15E+04	1.07E+05	3.48E+06	4.02E+05	0.	2.17E+04
TE127M	5.48E+04	1.89E+04	1.54E+04	2.12E+05	0.	3.16E+05	0.	6.99E+03
TE129M	7.11E+04	1.98E+04	2.30E+04	6.91E+04	0.	8.56E+04	0.	1.10E+04
I--131	4.04E+03	4.14E+03	1.35E+06	2.53E+03	0.	3.54E+02	0.	3.12E+03
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	1.04E-03	9.55E-04	0.	3.62E-04	1.09E-04	2.24E-05	0.	4.25E-04
XE-135	3.57E-02	3.30E-02	0.	1.25E-02	3.75E-03	7.71E-04	0.	1.47E-02
XE-137	2.83E+02	2.74E+02	0.	3.37E+01	3.21E+01	1.67E+00	0.	4.08E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	6.49E+08	1.09E+09	0.	1.39E+08	1.22E+08	5.91E+06	0.	2.33E+08
CS-136	8.26E+04	3.26E+05	0.	1.81E+05	2.49E+04	3.70E+04	0.	2.39E+05
CS-137	1.06E+09	1.03E+09	0.	1.27E+08	1.21E+08	6.27E+06	0.	1.53E+08
BA-140	1.28E+03	1.13E+00	0.	1.35E-01	6.72E-01	8.79E+01	0.	7.54E+01
CE-141	2.47E+01	1.24E+01	0.	1.93E+00	0.	1.55E+04	0.	1.04E+00
CE-144	1.03E+04	3.23E+03	0.	5.83E+02	0.	8.38E+05	0.	5.49E+02

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - INHALATION

AGE GROUP - INFANT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	1.85E+01	1.85E+01	8.07E+00	1.85E+01	1.85E+01	0.	1.85E+01
C---14	2.17E+02	1.84E+02	1.84E+02	2.57E+01	1.84E+02	1.84E+02	0.	1.84E+02
P---32	9.94E+03	5.81E+02	0.	0.	0.	6.51E+02	0.	3.78E+02
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.98E+02	0.	7.41E+01	1.05E+04	5.83E+02	0.	4.74E+01
FE--59	8.86E+01	2.09E+05	0.	0.	7.65E+03	1.42E+03	0.	7.95E+01
CO--58	0.	5.06E+00	0.	0.	3.78E+04	5.22E+02	0.	7.23E+00
CO--60	0.	3.62E+01	0.	0.	2.40E+05	1.41E+03	0.	5.05E+01
ZN--65	2.44E+02	7.77E+02	0.	5.19E+02	6.57E+03	4.03E+02	0.	3.51E+02
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	0.	0.	0.	0.	0.	0.	0.	0.
KR--90	0.	0.	0.	0.	0.	0.	0.	0.
RB--86	0.	1.02E+03	0.	0.	0.	1.25E+02	0.	4.45E+02
SR--89	1.86E+03	0.	0.	0.	9.94E+04	2.93E+03	0.	5.33E+01
SR--90	5.69E+05	0.	0.	0.	6.57E+05	5.96E+03	0.	3.47E+04
Y---91	2.57E+03	0.	0.	0.	1.13E+05	3.09E+03	0.	6.87E+01
ZR--95	4.66E+02	1.18E+02	0.	4.08E+02	7.77E+04	6.09E+02	0.	8.38E+01
NB--95	5.52E+01	2.48E+01	0.	5.83E+01	2.05E+04	5.22E+02	0.	1.45E+01
RU-103	7.29E+00	0.	0.	4.39E+01	2.43E+04	6.81E+02	0.	2.52E+00
RU-106	4.01E+02	0.	0.	1.01E+03	6.45E+05	7.59E+03	0.	4.92E+01
AG110M	8.13E+01	7.53E+01	0.	1.48E+02	3.49E+04	2.28E+03	0.	4.48E+01
CD115M	0.	1.48E+03	0.	1.19E+03	1.06E+04	2.89E+03	0.	4.79E+01
SN-123	1.34E+03	2.78E+01	2.78E+01	0.	1.55E+05	2.58E+03	0.	4.40E+01
SN-126	9.52E+03	2.52E+02	7.41E+01	0.	7.05E+04	9.58E+02	0.	3.62E+02
SB-124	2.35E+02	4.43E+00	5.69E-01	0.	1.87E+04	3.06E+03	0.	9.34E+01
SB-125	4.98E+02	5.37E+00	4.42E-01	0.	1.66E+04	7.59E+02	0.	1.00E+02
TE127M	9.52E+01	4.23E+01	2.48E+01	3.45E+02	7.23E+03	1.13E+03	0.	1.18E+01
TE129M	5.69E+01	2.49E+01	2.19E+01	2.75E+02	7.89E+04	3.15E+03	0.	8.85E+00
I--131	1.56E+03	1.84E+03	6.09E+05	4.62E+02	0.	4.62E+01	0.	1.08E+03
I--133	5.76E+02	8.31E+02	2.01E+05	1.95E+02	0.	9.82E+01	0.	2.52E+02
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	0.	0.	0.	0.	0.	0.	0.	0.
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	2.07E+04	3.55E+04	0.	2.17E+03	4.35E+03	5.90E+01	0.	3.15E+03
CS-136	2.95E+02	1.10E+03	0.	6.45E+02	9.04E+01	8.80E+01	0.	8.38E+02
CS-137	2.95E+04	3.15E+04	0.	1.68E+03	4.07E+03	5.69E+01	0.	1.90E+03
BA-140	2.45E+02	1.04E-01	0.	1.25E-01	7.05E+04	1.67E+02	0.	1.27E+01
CE-141	1.08E+02	6.69E+01	0.	4.72E+01	2.25E+04	8.86E+02	0.	7.77E+00
CE-144	2.01E+04	7.83E+03	0.	6.39E+03	5.45E+05	6.93E+03	0.	1.07E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GROUND PLANE DEPOSITION AGE GROUP - INFANT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	0.	0.	0.	0.	0.	0.	0.
C---14	0.	0.	0.	0.	0.	0.	0.	0.
P---32	0.	0.	0.	0.	0.	0.	0.	0.
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	4.39E+07	5.14E+07	4.39E+07
FE--59	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	8.73E+06	1.03E+07	8.73E+06
CO--58	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.21E+07	1.41E+07	1.21E+07
CO--60	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	6.80E+08	8.00E+08	6.80E+08
ZN--65	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.36E+07	2.71E+07	2.36E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	0.	0.	0.	0.	0.	0.	0.
KR--88	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	1.13E+04	9.90E+03
KR--89	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	8.08E+02	9.70E+02	8.08E+02
KR--90	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	6.16E-03	7.29E-03	6.16E-03
RB--86	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	3.26E+05	2.86E+05
SR--89	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	6.87E+02	7.97E+02	6.87E+02
SR--90	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	2.01E+05	1.70E+05
Y---91	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.43E+04	3.86E+04	3.43E+04
ZR--95	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.59E+07	1.86E+07	1.59E+07
NB--95	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	4.33E+06	5.09E+06	4.33E+06
RU-103	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	4.07E+06	3.49E+06
RU-106	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.33E+07	1.59E+07	1.33E+07
AG110M	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.13E+08	1.32E+08	1.13E+08
CD115M	0.	0.	0.	0.	0.	0.	0.	0.
SN-123	0.	0.	0.	0.	0.	0.	4.35E+04	0.
SN-125	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.64E+09	1.83E+09	1.64E+09
SB-124	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	1.90E+07	2.19E+07	1.90E+07
SB-125	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	7.27E+07	8.21E+07	7.27E+07
TE127M	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	2.79E+04	3.03E+04	2.79E+04
TE129M	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.22E+06	1.43E+06	1.22E+06
I--131	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	2.73E+05	3.32E+05	2.73E+05
I--133	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	4.77E+04	3.92E+04
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	0.	0.	0.	0.	0.	0.	0.	0.
XE-135	0.	0.	0.	0.	0.	0.	0.	0.
XE-137	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	8.69E+01	1.01E+02	8.69E+01
XE-138	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.01E+03	6.87E+03	6.01E+03
CS-134	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.22E+08	2.58E+08	2.22E+08
CS-136	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	5.30E+06	4.73E+06
CS-137	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.27E+08	3.81E+08	3.27E+08
BA-140	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	5.30E+06	6.02E+06	5.30E+06
CE-141	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.33E+05	4.88E+05	4.33E+05
CE-144	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	3.59E+06	4.15E+06	3.59E+06

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FORAGE) AGE GROUP - INFANT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	4.01E+01	4.01E+01	1.75E+01	4.01E+01	4.01E+01	0.	4.01E+01
C---14	2.08E+04	2.08E+04	2.08E+04	2.46E+03	2.08E+04	2.08E+04	0.	2.08E+04
P---32	5.29E+08	3.32E+07	0.	0.	0.	5.95E+07	0.	2.05E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.12E+05	0.	6.30E+04	0.	6.49E+05	0.	4.04E+04
FE--59	8.04E+05	1.91E+06	0.	0.	5.30E+05	6.30E+06	0.	7.26E+05
CO--58	0.	6.27E+05	0.	0.	0.	1.62E+06	0.	1.54E+06
CO--60	0.	2.05E+06	0.	0.	0.	5.06E+06	0.	4.91E+05
ZN--65	3.93E+07	1.25E+08	0.	8.34E+07	0.	7.85E+07	0.	5.64E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	3.30E-07	0.	0.	0.	1.54E-08	0.	1.15E-07
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	1.63E+04	0.	0.	0.	0.	3.04E+02	0.	4.67E+02
KR--90	1.48E+02	0.	0.	0.	0.	1.44E+00	0.	3.77E+01
RB--86	0.	7.61E+07	0.	0.	0.	1.50E+07	0.	3.55E+07
SR--89	3.70E+08	0.	0.	0.	0.	6.92E+06	0.	1.06E+07
SR--90	4.07E+09	0.	0.	0.	0.	3.96E+07	0.	1.04E+09
Y---91	2.02E+03	0.	0.	0.	0.	1.34E+05	0.	5.38E+01
ZR--95	3.87E+03	1.70E+03	0.	3.39E+02	0.	1.35E+06	0.	1.01E+03
NB--95	1.42E+04	6.40E+03	0.	1.26E+03	0.	5.12E+06	0.	3.77E+03
RU-103	2.13E+02	0.	0.	1.07E+02	0.	2.66E+03	0.	7.34E+01
RU-106	4.79E+03	0.	0.	1.00E+03	0.	3.72E+04	0.	5.88E+02
AG110M	1.54E+06	1.42E+06	0.	2.80E+06	0.	5.81E+08	0.	8.46E+05
CD115M	0.	3.45E+04	0.	2.74E+04	0.	1.45E+06	0.	1.10E+03
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	4.06E+07	8.05E+05	2.36E+05	0.	1.05E+05	2.56E+07	0.	1.21E+05
SB-124	6.84E+05	1.29E+04	1.65E+03	0.	5.31E+05	1.94E+07	0.	2.70E+05
SB-125	2.46E+06	6.25E+05	6.05E+05	8.23E+05	6.62E+07	6.48E+06	0.	3.72E+05
TE127M	1.62E+06	5.62E+05	5.22E+05	5.84E+05	0.	9.44E+06	0.	2.16E+05
TE129M	1.65E+07	5.66E+06	6.19E+06	7.55E+05	0.	9.92E+06	0.	2.51E+05
I--131	3.77E+07	4.49E+07	1.45E+10	1.13E+07	0.	1.69E+06	0.	2.63E+07
I--133	5.55E+05	8.11E+05	1.92E+08	1.91E+05	0.	1.44E+05	0.	2.46E+05
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	6.83E-04	6.31E-04	0.	2.39E-04	7.18E-05	1.48E-05	0.	2.80E-04
XE-135	2.36E-02	2.18E-02	0.	8.25E-03	2.48E-03	5.10E-04	0.	9.68E-03
XE-137	4.11E+02	4.60E+02	0.	2.33E+01	5.54E+01	1.19E+00	0.	2.64E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.03E+09	1.86E+09	0.	1.08E+08	2.13E+08	4.43E+06	0.	1.57E+08
CS-136	7.86E+06	3.10E+07	0.	1.73E+07	2.37E+06	3.53E+06	0.	2.23E+07
CS-137	1.54E+09	1.73E+09	0.	8.77E+07	2.06E+08	4.47E+06	0.	9.92E+07
BA-140	6.94E+06	6.98E+03	0.	3.46E+02	4.27E+03	2.30E+05	0.	3.59E+05
CE-141	6.89E+03	4.23E+03	0.	2.53E+02	0.	2.05E+06	0.	4.96E+02
CE-144	4.92E+05	1.94E+05	0.	1.33E+04	0.	2.03E+07	0.	2.63E+04

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - COWS MILK (CONTAMINATED FEED) AGE GROUP - INFANT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	3.96E+01	3.96E+01	1.73E+01	3.96E+01	3.96E+01	0.	3.96E+01
C---14	2.08E+04	2.08E+04	2.08E+04	2.45E+03	2.08E+04	2.08E+04	0.	2.08E+04
P---32	2.81E+06	1.76E+05	0.	0.	0.	3.16E+05	0.	1.09E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	8.00E+04	0.	2.38E+04	0.	2.45E+05	0.	1.53E+04
FE--59	8.61E+04	2.04E+05	0.	0.	5.68E+04	6.75E+05	0.	7.78E+04
CO--58	0.	1.14E+05	0.	0.	0.	2.96E+05	0.	2.80E+05
CO--60	0.	9.35E+05	0.	0.	0.	2.31E+06	0.	2.24E+05
ZN--65	1.59E+07	5.04E+07	0.	3.37E+07	0.	3.17E+07	0.	2.28E+07
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.26E-07	0.	0.	0.	1.06E-08	0.	7.87E-08
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	2.05E+03	0.	0.	0.	0.	3.83E+01	0.	5.89E+01
KR--90	7.34E+01	0.	0.	0.	0.	7.14E-01	0.	1.87E+01
RB--86	0.	1.10E+06	0.	0.	0.	2.17E+05	0.	5.13E+05
SR--89	4.66E+07	0.	0.	0.	0.	8.72E+05	0.	1.34E+06
SR--90	2.02E+09	0.	0.	0.	0.	1.97E+07	0.	5.15E+08
Y---91	3.05E+02	0.	0.	0.	0.	2.02E+04	0.	8.13E+00
ZR--95	3.63E+03	1.63E+03	0.	3.19E+02	0.	1.30E+06	0.	9.58E+02
NB--95	1.01E+03	4.55E+02	0.	8.91E+01	0.	3.64E+05	0.	2.68E+02
RU-103	1.92E+01	0.	0.	9.61E+00	0.	2.39E+02	0.	6.59E+00
RU-106	1.90E+03	0.	0.	3.97E+02	0.	1.47E+04	0.	2.33E+02
AG110M	5.85E+05	5.41E+05	0.	1.06E+06	0.	2.21E+08	0.	3.22E+05
CD115M	0.	3.56E+03	0.	2.83E+03	0.	1.50E+05	0.	1.14E+02
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	1.91E+07	3.78E+05	1.11E+05	0.	1.01E+05	1.89E+07	0.	5.97E+05
SB-124	1.06E+05	1.99E+03	2.56E+02	0.	8.20E+04	2.99E+06	0.	4.18E+04
SB-125	2.24E+06	6.65E+05	6.46E+05	8.81E+05	2.90E+07	3.40E+06	0.	3.18E+05
TE127M	4.83E+05	1.68E+05	1.56E+05	1.75E+06	0.	2.83E+06	0.	6.45E+04
TE129M	1.22E+06	4.19E+05	4.59E+05	5.59E+05	0.	7.35E+05	0.	1.86E+05
I--131	6.20E+03	7.38E+03	2.38E+06	1.85E+03	0.	2.78E+02	0.	4.32E+03
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	3.45E-04	3.19E-04	0.	1.21E-04	3.63E-05	7.45E-06	0.	1.42E-04
XE-135	1.19E-02	1.10E-02	0.	4.15E-03	1.25E-03	2.57E-04	0.	4.88E-03
XE-137	1.98E+02	2.21E+02	0.	1.12E+01	2.67E+01	5.72E-01	0.	1.27E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	4.42E+08	7.95E+08	0.	4.63E+07	9.09E+07	1.89E+06	0.	6.73E+07
CS-136	2.54E+04	1.00E+05	0.	5.58E+04	7.65E+03	1.14E+04	0.	7.22E+04
CS-137	7.42E+08	8.31E+08	0.	4.22E+07	1.00E+08	2.15E+06	0.	4.77E+07
BA-140	2.08E+04	2.09E+01	0.	1.04E+00	1.20E+01	7.08E+02	0.	1.07E+03
CE-141	4.25E+02	2.61E+02	0.	1.55E+01	0.	1.26E+05	0.	3.05E+01
CE-144	1.80E+05	7.08E+04	0.	4.84E+03	0.	7.40E+06	0.	9.68E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATED FORAGE) AGE GROUP - INFANT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	8.19E+01	8.19E+01	3.58E+01	8.19E+01	8.19E+01	0.	8.19E+01
C---14	2.08E+04	2.08E+04	2.08E+04	2.46E+03	2.08E+04	2.08E+04	0.	2.08E+04
P---32	6.83E+08	4.28E+07	0.	0.	0.	7.68E+07	0.	2.64E+07
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	2.55E+04	0.	7.59E+03	0.	7.81E+04	0.	4.87E+03
FE--59	1.07E+04	2.54E+04	0.	0.	7.05E+03	8.38E+04	0.	9.65E+03
CO--58	0.	7.64E+04	0.	0.	0.	1.98E+05	0.	1.87E+05
CO--60	0.	2.46E+05	0.	0.	0.	6.08E+05	0.	5.89E+05
ZN--65	4.73E+06	1.50E+07	0.	1.01E+07	0.	9.46E+06	0.	6.80E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	3.96E-08	0.	0.	0.	1.85E-09	0.	1.38E-08
KR--88	0.	4.00E-10	0.	0.	0.	0.	0.	2.12E-10
KR--89	3.49E+04	0.	0.	0.	0.	6.52E+02	0.	1.00E+03
KR--90	3.11E+02	0.	0.	0.	0.	3.01E+00	0.	7.92E+01
RB--86	0.	9.66E+06	0.	0.	0.	1.90E+06	0.	4.50E+05
SR--89	7.94E+08	0.	0.	0.	0.	1.48E+07	0.	2.28E+07
SR--90	8.56E+09	0.	0.	0.	0.	8.28E+07	0.	2.18E+09
Y---91	2.47E+02	0.	0.	0.	0.	1.63E+04	0.	6.58E+00
ZR--95	4.20E+02	1.85E+02	0.	3.67E+01	0.	1.46E+05	0.	1.10E+02
NB--95	1.76E+03	7.92E+02	0.	1.55E+02	0.	6.33E+05	0.	4.66E+02
RU-103	2.63E+01	0.	0.	1.32E+01	0.	3.28E+02	0.	9.04E+00
RU-106	5.76E+02	0.	0.	1.21E+02	0.	4.47E+03	0.	7.08E+01
AG110M	1.05E+05	1.72E+05	0.	3.37E+05	0.	7.00E+07	0.	1.02E+05
CD115M	0.	4.25E+03	0.	3.37E+03	0.	1.79E+05	0.	1.36E+02
SN-123	1.54E-01	2.39E-03	2.39E-03	0.	0.	3.81E-02	0.	3.79E-03
SN-126	4.87E+06	9.66E+04	2.83E+04	0.	1.16E+04	2.94E+06	0.	1.45E+05
SB-124	8.35E+04	1.58E+03	2.02E+02	0.	6.48E+04	2.36E+06	0.	3.30E+04
SB-125	2.98E+05	7.56E+04	7.32E+04	9.95E+04	7.96E+06	7.80E+05	0.	4.49E+04
TE127M	1.96E+05	6.80E+04	6.31E+04	7.08E+05	0.	1.14E+06	0.	2.61E+04
TE129M	2.04E+06	7.00E+05	7.67E+05	9.34E+05	0.	1.23E+06	0.	3.10E+05
I--131	5.15E+07	6.13E+07	1.97E+10	1.54E+07	0.	2.31E+06	0.	3.59E+07
I--133	2.19E+06	3.19E+06	7.55E+08	7.51E+05	0.	5.67E+05	0.	9.68E+05
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	2.05E-03	1.89E-03	0.	7.17E-04	2.16E-04	4.43E-05	0.	8.41E-04
XE-135	7.08E-02	6.54E-02	0.	2.48E-02	7.44E-03	1.53E-03	0.	2.90E-02
XE-137	1.23E+03	1.38E+03	0.	7.00E+01	1.66E+02	3.57E+00	0.	7.92E+01
XE-138	7.56E-05	1.49E-04	0.	1.10E-04	1.09E-05	6.37E-10	0.	7.41E-05
CS-134	3.11E+09	5.59E+09	0.	3.26E+08	6.39E+08	1.33E+07	0.	4.73E+08
CS-136	2.55E+07	1.01E+08	0.	5.61E+07	7.69E+06	1.15E+07	0.	7.26E+07
CS-137	4.63E+09	5.18E+09	0.	2.63E+08	6.25E+08	1.34E+07	0.	2.98E+08
BA-140	9.03E+05	9.09E+02	0.	4.51E+01	5.56E+02	2.93E+04	0.	4.67E+04
CE-141	8.54E+02	5.24E+02	0.	3.14E+01	0.	2.54E+05	0.	6.14E+01
CE-144	5.92E+04	2.34E+04	0.	1.60E+03	0.	2.44E+06	0.	3.19E+03

DOSE FACTORS FOR GASEOUS DISCHARGES
BASED ON 1 CI/YR RELEASE OF EACH ISOTOPE AND A VALUE OF UNITY FOR X/Q, DEPLETED X/Q AND RELATIVE DEPOSITION

PATHWAY - GOATS MILK (CONTAMINATED FEED) AGE GROUP - INFANT

NUCLIDE	ORGAN DOSE (MREM)							
	BONE	LIVER	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY
H----3	0.	8.08E+01	8.08E+01	3.53E+01	8.08E+01	8.08E+01	0.	8.08E+01
C---14	2.08E+04	2.08E+04	2.08E+04	2.46E+03	2.08E+04	2.08E+04	0.	2.08E+04
P---32	3.62E+06	2.27E+05	0.	0.	0.	4.07E+05	0.	1.40E+05
AR--41	0.	0.	0.	0.	0.	0.	0.	0.
MN--54	0.	9.63E+03	0.	2.87E+03	0.	2.95E+04	0.	1.84E+03
FE--59	1.15E+03	2.72E+03	0.	0.	7.55E+02	8.98E+03	0.	1.04E+03
CO--58	0.	1.39E+04	0.	0.	0.	3.61E+04	0.	3.41E+04
CO--60	0.	1.12E+05	0.	0.	0.	2.77E+05	0.	2.69E+05
ZN--65	1.91E+06	6.07E+06	0.	4.06E+06	0.	3.82E+06	0.	2.75E+06
KR-83M	0.	0.	0.	0.	0.	0.	0.	0.
KR-85M	0.	0.	0.	0.	0.	0.	0.	0.
KR--85	0.	0.	0.	0.	0.	0.	0.	0.
KR--87	0.	2.72E-08	0.	0.	0.	1.27E-09	0.	9.45E-09
KR--88	0.	0.	0.	0.	0.	0.	0.	0.
KR--89	4.39E+03	0.	0.	0.	0.	8.21E+01	0.	1.26E+02
KR--90	1.54E+02	0.	0.	0.	0.	1.49E+00	0.	3.93E+01
RB--86	0.	1.40E+05	0.	0.	0.	2.75E+04	0.	6.51E+04
SR--89	9.99E+07	0.	0.	0.	0.	1.87E+06	0.	2.87E+05
SR--90	4.24E+09	0.	0.	0.	0.	4.11E+07	0.	1.08E+09
Y---91	3.73E+01	0.	0.	0.	0.	2.47E+03	0.	9.93E-01
ZR--95	4.39E+02	1.97E+02	0.	3.87E+01	0.	1.57E+05	0.	1.16E+02
NB--95	1.25E+02	5.62E+01	0.	1.10E+01	0.	4.50E+04	0.	3.31E+01
RU-103	2.36E+00	0.	0.	1.18E+00	0.	2.95E+01	0.	8.12E-01
RU-106	2.28E+02	0.	0.	4.78E+01	0.	1.77E+03	0.	2.80E+01
AG110M	7.05E+04	6.52E+04	0.	1.28E+05	0.	2.66E+07	0.	3.88E+04
CD115M	0.	4.38E+02	0.	3.47E+02	0.	1.84E+04	0.	1.40E+01
SN-123	0.	0.	0.	0.	0.	0.	0.	0.
SN-126	2.28E+06	4.54E+04	1.33E+04	0.	1.22E+04	2.28E+06	0.	7.17E+04
SB-124	1.29E+04	2.44E+02	3.12E+01	0.	1.00E+04	3.65E+05	0.	5.10E+03
SB-125	2.72E+05	8.09E+04	7.87E+04	1.07E+05	3.48E+06	4.09E+05	0.	3.80E+04
TE127M	5.86E+04	2.04E+04	1.89E+04	2.12E+05	0.	3.42E+05	0.	7.82E+03
TE129M	1.51E+05	5.18E+04	5.73E+04	6.91E+04	0.	9.09E+04	0.	2.30E+04
I--131	8.47E+03	1.01E+04	3.25E+06	2.53E+03	0.	3.79E+02	0.	5.90E+03
I--133	0.	0.	0.	0.	0.	0.	0.	0.
XE131M	0.	0.	0.	0.	0.	0.	0.	0.
XE133M	0.	0.	0.	0.	0.	0.	0.	0.
XE-133	0.	0.	0.	0.	0.	0.	0.	0.
XE135M	1.04E-03	9.55E-04	0.	3.62E-04	1.09E-04	2.24E-05	0.	4.25E-04
XE-135	3.57E-02	3.30E-02	0.	1.25E-02	3.75E-03	7.71E-04	0.	1.47E-02
XE-137	5.93E+02	6.63E+02	0.	3.37E+01	8.00E+01	1.72E+00	0.	3.81E+01
XE-138	0.	0.	0.	0.	0.	0.	0.	0.
CS-134	1.33E+09	2.39E+09	0.	1.39E+08	2.73E+08	5.68E+06	0.	2.02E+08
CS-136	8.26E+04	3.26E+05	0.	1.81E+05	2.49E+04	3.70E+04	0.	2.35E+05
CS-137	2.23E+09	2.49E+09	0.	1.27E+08	3.00E+08	6.44E+06	0.	1.43E+08
BA-140	2.71E+03	2.72E+00	0.	1.35E-01	1.66E+00	9.22E+01	0.	1.40E+02
CE-141	5.26E+01	3.23E+01	0.	1.93E+00	0.	1.57E+04	0.	3.78E+00
CE-144	2.16E+04	8.53E+03	0.	5.83E+02	0.	8.91E+05	0.	1.17E+03

APPENDIX B

Reference Atmospheric Dispersion and Deposition Factors for Duane Arnold Energy Center

Annual Averaged Atmospheric Dispersion and Deposition to DAEC Site Boundaries (Reference Meteorology)

Sector	Distance (meters)	Stack Release X/Q (sec/m^3)	Stack Release Depleted X/Q (sec/m^3)	Stack Release D/Q (m^{-2})	Vent Release X/Q (sec/m^3)	Vent Release Depleted X/Q (sec/m^3)	Vent Release D/Q (m^{-2})
N	1176	2.7E-7	2.6E-7	1.4E-8	3.3E-6	3.2E-6	3.1E-8
NNE	1203	1.2E-7	1.1E-7	9.0E-9	7.5E-7	7.1E-7	1.4E-8
NE	695	1.3E-7	1.3E-7	1.1E-8	5.3E-7	4.9E-7	1.8E-8
ENE	642	7.7E-8	7.6E-8	6.1E-9	3.9E-7	3.6E-7	1.4E-8
E	535	2.1E-7	2.0E-7	1.4E-8	1.3E-6	1.2E-6	3.9E-8
ESE	455	1.1E-7	1.1E-7	9.3E-9	9.9E-7	9.0E-7	3.4E-8
SE	588	1.4E-7	1.3E-7	1.1E-8	9.5E-7	9.0E-7	3.6E-8
SSE	481	2.0E-7	2.0E-7	1.7E-8	1.3E-6	1.2E-6	5.1E-8
S	455	8.8E-8	8.7E-8	7.5E-9	7.5E-7	6.8E-7	2.6E-8
SSW	535	4.2E-8	4.1E-8	3.2E-9	4.4E-7	3.9E-7	1.6E-8
SW	668	2.3E-8	2.2E-8	1.7E-9	4.3E-7	4.0E-7	1.3E-8
WSW	749	2.7E-8	2.6E-8	2.0E-9	4.5E-7	4.2E-7	1.1E-8
W	668	4.1E-8	4.0E-8	3.1E-9	5.4E-7	5.1E-7	1.4E-8
WNW	722	6.0E-8	5.8E-8	5.2E-9	8.6E-7	8.0E-7	2.1E-8
NW	936	9.7E-8	9.3E-8	6.4E-9	1.3E-6	1.2E-6	1.7E-8
NNW	1257	2.8E-7	2.7E-7	9.1E-9	4.3E-6	4.0E-6	2.1E-8

Table

ATMOSPHERIC DISPERSION FACTORS FOR-DUANE ARNOLD VENT-STACK SEASON-ANNUAL REQ-DX-2 3YR SPT

RUN TYPE- X/Q SEC/M3 DISTANCE (METERS)

IN DIRECTION SECTOR	455	2413	4022	5631	7240	12067	24135	40225	56315	72405
N	2.99E-07	2.78E-07	1.48E-07	1.01E-07	1.04E-07	5.08E-08	1.59E-08	8.39E-09	5.56E-09	4.06E-09
NNE	2.25E-07	9.84E-08	8.51E-08	6.39E-08	5.02E-08	3.44E-08	1.09E-08	5.80E-09	3.86E-09	2.84E-09
NE	1.60E-07	8.54E-08	6.30E-08	5.01E-08	3.64E-08	2.88E-08	9.08E-09	4.77E-09	3.17E-09	2.33E-09
ENE	9.00E-08	1.40E-07	6.66E-08	4.13E-08	3.04E-08	1.84E-08	6.42E-09	3.61E-09	2.46E-09	1.84E-09
E	2.19E-07	1.51E-07	9.50E-08	5.75E-08	4.18E-08	2.01E-08	6.90E-09	3.85E-09	2.61E-09	1.95E-09
ESE	1.10E-07	1.07E-07	9.39E-08	5.41E-08	4.08E-08	2.46E-08	8.44E-09	4.69E-09	3.18E-09	2.37E-09
SE	1.52E-07	1.23E-07	7.45E-08	4.80E-08	3.54E-08	2.49E-08	8.32E-09	4.59E-09	3.09E-09	2.29E-09
SSE	2.04E-07	1.05E-07	6.04E-08	4.70E-08	3.69E-08	3.04E-08	1.04E-08	5.81E-09	3.94E-09	2.93E-09
S	8.87E-08	7.16E-08	4.71E-08	3.28E-08	3.20E-08	1.99E-08	6.92E-09	3.92E-09	2.67E-09	1.99E-09
SSW	4.04E-08	6.66E-08	4.35E-08	2.95E-08	2.88E-08	1.95E-08	6.40E-09	3.47E-09	2.32E-09	1.70E-09
SW	2.16E-08	6.74E-08	4.75E-08	3.47E-08	2.54E-08	1.79E-08	5.73E-09	3.07E-09	2.04E-09	1.49E-09
WSW	2.08E-08	7.58E-08	4.75E-08	3.34E-08	2.53E-08	1.70E-08	5.33E-09	2.81E-09	1.86E-09	1.35E-09
W	3.31E-08	9.49E-08	5.44E-08	5.40E-08	3.71E-08	1.54E-08	4.76E-09	2.50E-09	1.63E-09	1.18E-09
WNW	5.64E-08	1.41E-07	9.87E-08	5.78E-08	4.42E-08	2.58E-08	7.78E-09	4.00E-09	2.61E-09	1.89E-09
NW	1.12E-07	2.33E-07	1.17E-07	6.89E-08	5.71E-08	3.17E-08	9.73E-09	5.04E-09	3.31E-09	2.41E-09
NNW	2.24E-07	2.40E-07	1.19E-07	7.29E-08	5.26E-08	4.26E-08	1.29E-08	6.61E-09	4.35E-09	3.17E-09

RUN TYPE- DEPLETED X/Q SEC/M3 DISTANCE (METERS)

IN DIRECTION SECTOR	455	2413	4022	5631	7240	12067	24135	40225	56315	72405
N	2.94E-07	2.67E-07	1.41E-07	9.47E-08	9.64E-08	4.56E-08	1.31E-08	6.18E-09	3.75E-09	2.56E-09
NNE	2.21E-07	9.41E-08	8.06E-08	6.00E-08	4.68E-08	3.09E-08	9.03E-09	4.33E-09	2.65E-09	1.82E-09
NE	1.58E-07	8.17E-08	5.96E-08	4.71E-08	3.40E-08	2.58E-08	7.26E-09	3.32E-09	1.96E-09	1.32E-09
ENE	8.87E-08	1.34E-07	6.32E-08	3.90E-08	2.86E-08	1.71E-08	5.70E-09	3.04E-09	1.99E-09	1.43E-09
E	2.14E-07	1.45E-07	8.96E-08	5.40E-08	3.91E-08	1.86E-08	6.16E-09	3.31E-09	2.17E-09	1.57E-09
ESE	1.08E-07	1.02E-07	8.81E-08	5.24E-08	3.78E-08	2.24E-08	7.22E-09	3.73E-09	2.38E-09	1.69E-09
SE	1.50E-07	1.18E-07	7.04E-08	4.49E-08	3.28E-08	2.27E-08	7.34E-09	3.90E-09	2.55E-09	1.83E-09
SSE	2.01E-07	1.01E-07	6.58E-08	4.40E-08	3.41E-08	2.76E-08	9.16E-09	4.98E-09	3.29E-09	2.39E-09
S	8.74E-08	6.92E-08	4.49E-08	3.09E-08	2.96E-08	1.83E-08	6.29E-09	3.55E-09	2.40E-09	1.76E-09
SSW	3.97E-08	6.46E-08	4.15E-08	2.77E-08	2.64E-08	1.74E-08	5.45E-09	2.80E-09	1.79E-09	1.27E-09
SW	2.12E-08	6.55E-08	4.52E-08	3.23E-08	2.34E-08	1.59E-08	4.90E-09	2.52E-09	1.62E-09	1.15E-09
WSW	2.05E-08	7.34E-08	4.50E-08	3.10E-08	2.31E-08	1.48E-08	4.40E-09	2.19E-09	1.37E-09	9.61E-10
W	3.25E-08	9.14E-08	5.31E-08	4.89E-08	3.32E-08	1.35E-08	3.99E-09	2.01E-09	1.27E-09	8.95E-10
WNW	5.55E-08	1.35E-07	9.22E-08	5.31E-08	4.00E-08	2.21E-08	5.99E-09	2.71E-09	1.59E-09	1.06E-09
NW	1.10E-07	2.23E-07	1.10E-07	6.40E-08	5.22E-08	2.77E-08	7.64E-09	3.46E-09	2.04E-09	1.36E-09
NNW	2.19E-07	2.30E-07	1.12E-07	6.85E-08	4.90E-08	3.66E-08	9.75E-09	4.27E-09	2.46E-09	1.62E-09

RUN TYPE- DEPOSITION D/Q M-2 DISTANCE (METERS)

IN DIRECTION SECTOR	455	2413	4022	5631	7240	12067	24135	40225	56315	72405
N	2.20E-08	5.59E-09	1.78E-09	8.52E-10	5.28E-10	2.07E-10	5.52E-11	2.68E-11	1.72E-11	1.14E-11
NNE	1.83E-08	3.47E-09	1.24E-09	5.96E-10	3.68E-10	1.36E-10	3.50E-11	1.68E-11	1.07E-11	7.14E-12
NE	1.34E-08	2.52E-09	8.44E-10	4.02E-10	2.47E-10	1.22E-10	3.63E-11	1.53E-11	8.71E-12	5.41E-12
ENE	7.17E-09	1.78E-09	5.22E-10	2.39E-10	1.46E-10	4.78E-11	1.10E-11	5.20E-12	3.51E-12	2.53E-12
E	1.54E-08	2.87E-09	8.80E-10	4.00E-10	2.42E-10	7.88E-11	1.77E-11	7.95E-12	5.13E-12	3.64E-12
ESE	9.33E-09	2.86E-09	1.02E-09	4.65E-10	2.82E-10	9.46E-11	2.22E-11	1.04E-11	6.80E-12	4.64E-12
SE	1.25E-08	3.85E-09	1.31E-09	6.31E-10	3.90E-10	1.27E-10	2.78E-11	1.21E-11	7.61E-12	5.32E-12
SSE	1.72E-08	4.33E-09	1.57E-09	7.81E-10	4.87E-10	1.63E-10	3.55E-11	1.51E-11	9.30E-12	6.43E-12
S	7.53E-09	2.30E-09	8.47E-10	4.27E-10	2.75E-10	9.20E-11	1.99E-11	8.21E-12	4.88E-12	3.41E-12
SSW	3.35E-09	1.63E-09	6.23E-10	3.18E-10	2.09E-10	6.74E-11	1.44E-11	6.17E-12	3.92E-12	2.72E-12
SW	1.85E-09	1.55E-09	6.18E-10	3.22E-10	2.01E-10	6.63E-11	1.38E-11	5.57E-12	3.39E-12	2.33E-12
WSW	2.06E-09	1.56E-09	5.97E-10	3.09E-10	1.94E-10	6.34E-11	1.33E-11	5.51E-12	3.41E-12	2.32E-12
W	3.33E-09	2.01E-09	7.44E-10	4.01E-10	2.44E-10	7.65E-11	1.60E-11	6.51E-12	3.92E-12	2.69E-12
WNW	5.73E-09	3.14E-09	1.19E-09	5.63E-10	3.51E-10	1.44E-10	3.81E-11	1.52E-11	8.55E-12	5.22E-12
NW	8.15E-09	3.56E-09	1.14E-09	5.32E-10	3.24E-10	1.54E-10	4.44E-11	1.83E-11	1.03E-11	6.32E-12
NNW	1.44E-08	3.54E-09	1.10E-09	5.14E-10	3.17E-10	2.13E-10	6.45E-11	2.52E-11	1.35E-11	8.10E-12

Table

ATMOSPHERIC DISPERSION FACTORS FOR-DUANE ARNOLD VENT-REACTOR BUILDING SEASON-ANNUAL REQ-DX-4 3YR [illegible] SPLT

RUN TYPE- X/Q SEC/M3 DISTANCE (METERS)

IN DIRECTION SECTOR	455	2413	4022	5631	7240	12067	24135	40225	56315	72405
N	1.74E-06	2.12E-06	9.19E-07	6.20E-07	7.44E-07	3.17E-07	9.29E-08	4.66E-08	3.07E-08	2.25E-08
NNE	1.16E-06	5.33E-07	4.12E-07	3.41E-07	3.00E-07	2.21E-07	6.62E-08	3.34E-08	2.21E-08	1.63E-08
NE	7.84E-07	4.59E-07	3.06E-07	3.02E-07	2.25E-07	1.75E-07	5.22E-08	2.62E-08	1.74E-08	1.28E-08
ENE	5.44E-07	1.02E-06	4.17E-07	2.44E-07	1.73E-07	8.95E-08	2.73E-08	1.40E-08	9.28E-09	6.85E-09
E	1.28E-06	8.77E-07	4.86E-07	2.67E-07	1.81E-07	7.42E-08	2.23E-08	1.14E-08	7.54E-09	5.54E-09
ESE	9.79E-07	5.60E-07	3.90E-07	2.10E-07	1.41E-07	6.18E-08	1.80E-08	8.98E-09	5.87E-09	4.27E-09
SE	1.27E-06	7.06E-07	3.08E-07	1.74E-07	1.21E-07	7.09E-08	2.06E-08	1.03E-08	6.73E-09	4.87E-09
SSE	1.40E-06	4.84E-07	2.21E-07	1.28E-07	9.27E-08	6.31E-08	1.84E-08	9.27E-09	6.04E-09	4.37E-09
S	7.47E-07	3.80E-07	1.80E-07	1.10E-07	1.04E-07	5.63E-08	1.68E-08	8.57E-09	5.61E-09	4.08E-09
SSW	5.05E-07	3.95E-07	1.98E-07	1.26E-07	1.49E-07	1.09E-07	3.23E-08	1.63E-08	1.08E-08	7.91E-09
SW	4.09E-07	5.07E-07	2.72E-07	1.98E-07	1.48E-07	1.69E-07	5.21E-08	2.68E-08	1.78E-08	1.32E-08
WSW	3.40E-07	4.47E-07	2.11E-07	1.51E-07	1.32E-07	2.04E-07	6.40E-08	3.31E-08	2.21E-08	1.64E-08
W	4.75E-07	6.17E-07	2.96E-07	4.67E-07	3.29E-07	1.46E-07	4.62E-08	2.42E-08	1.62E-08	1.20E-08
WNW	7.46E-07	8.58E-07	5.10E-07	2.98E-07	2.60E-07	1.58E-07	4.61E-08	2.30E-08	1.51E-08	1.10E-08
NW	9.54E-07	1.62E-06	7.25E-07	4.16E-07	3.72E-07	1.77E-07	5.16E-08	2.57E-08	1.69E-08	1.23E-08
NNW	1.77E-06	2.24E-06	9.34E-07	5.49E-07	3.92E-07	2.68E-07	7.77E-08	3.87E-08	2.54E-08	1.86E-08

RUN TYPE- DEPLETED X/Q SEC/M3 DISTANCE (METERS)

IN DIRECTION SECTOR	455	2413	4022	5631	7240	12067	24135	40225	56315	72405
N	1.62E-06	2.04E-06	8.82E-07	5.93E-07	6.15E-07	2.13E-07	5.33E-08	2.25E-08	1.29E-08	8.48E-09
NNE	1.08E-06	5.08E-07	3.93E-07	3.27E-07	2.86E-07	1.52E-07	3.88E-08	1.65E-08	9.49E-09	6.27E-09
NE	7.36E-07	4.36E-07	2.92E-07	2.90E-07	2.14E-07	1.10E-07	2.76E-08	1.16E-08	6.71E-09	4.44E-09
ENE	5.12E-07	9.56E-07	3.92E-07	2.29E-07	1.60E-07	6.94E-08	1.83E-08	7.92E-09	4.56E-09	3.02E-09
E	1.20E-06	8.26E-07	4.33E-07	2.35E-07	1.57E-07	5.87E-08	1.54E-08	6.64E-09	3.81E-09	2.51E-09
ESE	9.03E-07	5.22E-07	3.40E-07	1.81E-07	1.19E-07	4.23E-08	1.05E-08	4.43E-09	2.52E-09	1.65E-09
SE	1.17E-06	6.60E-07	2.86E-07	1.61E-07	1.11E-07	5.38E-08	1.35E-08	5.77E-09	3.28E-09	2.13E-09
SSE	1.28E-06	4.51E-07	2.04E-07	1.17E-07	9.36E-08	4.78E-08	1.22E-08	5.21E-09	2.96E-09	1.93E-09
S	6.86E-07	3.59E-07	1.69E-07	1.02E-07	9.50E-08	4.69E-08	1.24E-08	5.44E-09	3.15E-09	2.08E-09
SSW	4.65E-07	3.76E-07	1.87E-07	1.19E-07	1.41E-07	8.09E-08	2.07E-08	8.85E-09	5.08E-09	3.34E-09
SW	3.77E-07	4.83E-07	2.57E-07	1.86E-07	1.39E-07	1.34E-07	3.60E-08	1.57E-08	9.07E-09	6.01E-09
WSW	3.16E-07	4.24E-07	1.97E-07	1.40E-07	1.23E-07	1.60E-07	4.34E-08	1.89E-08	1.10E-08	7.31E-09
W	4.43E-07	5.85E-07	2.78E-07	4.27E-07	2.98E-07	1.22E-07	3.40E-08	1.51E-08	8.78E-09	5.84E-09
WNW	6.89E-07	8.04E-07	4.73E-07	2.76E-07	2.36E-07	1.01E-07	2.49E-08	1.04E-08	5.97E-09	3.91E-09
NW	8.99E-07	1.54E-06	6.83E-07	3.91E-07	3.23E-07	1.13E-07	2.78E-08	1.17E-08	6.67E-09	4.37E-09
NNW	1.67E-06	2.16E-06	9.01E-07	5.29E-07	3.75E-07	1.60E-07	3.88E-08	1.62E-08	9.30E-09	6.10E-09

RUN TYPE- DEPOSITION D/Q M-2 DISTANCE (METERS)

IN DIRECTION SECTOR	455	2413	4022	5631	7240	12067	24135	40225	56315	72405
N	6.09E-08	7.50E-09	2.03E-09	9.87E-10	9.99E-10	4.05E-10	8.71E-11	3.22E-11	1.64E-11	1.01E-11
NNE	4.52E-08	4.30E-09	1.27E-09	6.00E-10	4.12E-10	2.32E-10	5.04E-11	1.86E-11	9.47E-12	5.84E-12
NE	3.00E-08	3.11E-09	8.88E-10	4.52E-10	2.89E-10	1.60E-10	3.33E-11	1.23E-11	6.22E-12	3.86E-12
ENE	2.15E-08	2.55E-09	7.03E-10	3.51E-10	2.30E-10	1.06E-10	2.53E-11	9.51E-12	4.92E-12	3.01E-12
E	4.51E-08	3.43E-09	1.06E-09	5.28E-10	3.38E-10	1.30E-10	3.11E-11	1.17E-11	6.08E-12	3.72E-12
ESE	3.47E-08	4.18E-09	1.35E-09	6.59E-10	4.13E-10	1.62E-10	3.46E-11	1.28E-11	6.52E-12	4.03E-12
SE	4.75E-08	5.70E-09	1.58E-09	7.13E-10	4.24E-10	2.13E-10	4.91E-11	1.84E-11	9.57E-12	5.88E-12
SSE	5.37E-08	5.93E-09	1.75E-09	8.04E-10	4.85E-10	2.20E-10	5.01E-11	1.89E-11	9.84E-12	6.06E-12
S	2.61E-08	3.40E-09	1.01E-09	4.69E-10	2.85E-10	1.38E-10	3.53E-11	1.36E-11	7.24E-12	4.41E-12
SSW	1.76E-08	2.69E-09	8.03E-10	3.73E-10	2.29E-10	1.43E-10	3.36E-11	1.25E-11	6.45E-12	3.94E-12
SW	1.57E-08	3.22E-09	9.88E-10	4.58E-10	2.76E-10	1.63E-10	4.04E-11	1.52E-11	7.88E-12	4.77E-12
WSW	1.36E-08	2.73E-09	8.16E-10	3.78E-10	2.27E-10	1.31E-10	3.14E-11	1.18E-11	6.07E-12	3.69E-12
W	1.71E-08	3.07E-09	8.93E-10	5.30E-10	3.47E-10	1.40E-10	3.58E-11	1.35E-11	7.08E-12	4.28E-12
WNW	2.78E-08	4.78E-09	1.40E-09	6.32E-10	4.31E-10	1.93E-10	4.03E-11	1.48E-11	7.53E-12	4.67E-12
NW	3.14E-08	4.49E-09	1.23E-09	5.94E-10	4.72E-10	2.05E-10	4.29E-11	1.58E-11	8.02E-12	4.97E-12
NNW	5.28E-08	5.06E-09	1.37E-09	6.60E-10	4.33E-10	2.97E-10	6.13E-11	2.25E-11	1.14E-11	7.09E-12