TIME OF RUN 12:08:22.6

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-mn-h.inp

OUTPUT FILE NAME: 25-mn-h.out

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****
*   *
*   This output was produced by the model: *
*   *

```
*              GWSCREEN                    *

*        Version Control Copy, Version 2.4a       *

*      A semi-analytical model for the assessment     *

*      of the groundwater pathway from the leaching  *

*      of surficial and buried contamination and     *

*   release of contaminants from percolation ponds  *

*                  02-28-95                  *

*                 Arthur S. Rood             *

*        Idaho National Engineering Laboratory    *

*               EG&G Idaho Inc.              *

*     Subsurface and Environmental Modeling Unit   *

*                 PO Box 1625                *

*          Idaho Falls, Idaho 83415          *

****************************************************
```

>>> TITLE OF PROJECT:

'Manganese, ARA-25, hazard quotient'   TITLE

~~~~~~

GAUSSIAN QUADRATURE SOLUTION

MODEL OPTIONS

IMODE: 6

KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC

IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION

ITYPE:0 (0) VERT AVG; (1) NON-VERT AVG; (2) AVG FROM 0 TO ZD

>>> INPUT DATA

****

NUMBER OF RADIOACTIVE PROGENY   0

LENGTH OF SOURCE PARALLEL TO GW FLOW (m)   7.30E+00

```
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)    4.90E+00

THICKNESS OF SOURCE (m)                          1.50E+00

PERCOLATION RATE (darcy vel m/y)                 1.00E-01

VOLUMETRIC WATER CONTENT IN SOURCE               4.10E-01

VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE     4.10E-01

BULK DENSITY AT SOURCE  (g/cm**3)                1.50E+00

SORPTION COEFFICIENT AT SOURCE (ml/g)            5.00E+01

BULK DENSITY IN UNSAT ZONE (g/cm**3)             1.90E+00

UNSATURATED ZONE THICKNESS (m)                   5.80E+00

SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)        5.00E+00

OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)   0.00E+00

INITIAL MASS OR ACTIVITY (mg or Ci)              1.14E+08

MOLECULAR WEIGHT (g/mole)                        5.49E+01

SOLUBILITY LIMIT (mg/L)                          1.00E+06

HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)      1.00E+38

BULK DENSITY OF AQUIFER (g/cm**3)                1.90E+00

POROSITY OF AQUIFER                              1.00E-01

SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)        5.00E+00

DISPERSIVITY X DIRECTION (m)                     9.00E+00

DISPERSIVITY Y DIRECTION (m)                     4.00E+00

DISPERSIVITY Z DIRECTION (m)                     1.00E-09

PORE VELOCITY  (m/y)                             5.70E+02

WELL SCREEN THICKNESS (m)                        1.50E+01

DISTANCE TO RECEPTOR ALONG X AXIS       (m)      3.65E+00

DISTANCE TO RECEPTOR ALONG Y AXIS       (m)      0.00E+00

DISTANCE TO RECEPTOR ALONG Z AXIS       (m)      0.00E+00

NON-CARCINOGENIC REFERENCE DOSE RfD (mg/kg/d)    1.40E-01

UNITS OF CONTAMINANT                             mg
```

~~~~~~

LIMITING SOIL CONCENTRATION CALCULATION

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y)   8.8406E-04

UNSATURATED PORE VELOCITY (m/y)   2.4390E-01

DECAY CONSTANT(S) (1/y)   6.9315E-39

RETARDATION FACTOR(S) (SATURATED)   9.6000E+01

RETARDATION FACTOR (UNSATURATED)   2.4171E+01

SOLUBILITY LIMITED MASS (mg)   4.0461E+12

SOLUBILITY LIMITED ACTIVITY (Ci)   0.0000E+00

TRANSIT TIME IN UNSAT ZONE (years)   5.7478E+02

FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

~~~~~~

>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION

****

INTEGRATION TIME (years)   30

BODY WEIGHT (kg)   7.000E+01

AVERAGING TIME (days)   1.100E+04

WATER INTAKE RATE (L/d)   2.000E+00

EXPOSURE FREQUENCY (days/year)   3.500E+02

EXPOSURE DURATION (years)   3.000E+01

RADIOLOGICAL DOSE LIMIT (rem/y)   4.000E-03

CARCINOGENIC RISK CRITERIA   1.000E-04

HAZARD QUOTIENT   1.000E+00

~~~~~~

>>> RESULTS OF CALCULATIONS

```
**********************************************************

LIMITING GROUNDWATER CONCENTRATION (mg/L):    5.13E+00

MAXIMUM GROUNDWATER CONCENTRATION (mg/L):    6.04E-03

AVERAGE GROUNDWATER CONCENTRATION (mg/L):    5.93E-03

HAZARD QUOTIENT FOR INPUT MASS:              1.16E-03

PEAK TIME (y):                           5.821525E+02

LIMITING SOIL CONCENTRATION (mg/m**3):   1.838E+09

LIMITING SOIL CONCENTRATION (mg/kg):     1.226E+06

LIMITING INVENTORY IN SOIL (mg):         9.864E+10

EXECUTION TIME (seconds)        0
```

```
'Ra-226 Group 1, base sed, risk'                         TITLE

1   0                               KFLAG, NPROG

30 0                                INTIME

7.3 4.9  1.5                        AL, WA, THICKS

0.1    .41    .41                   PERC, THETAS, THETAU

1.5   0.   0.                       RHOS, ZKDS, RC2

1.9   0.                            RHOU, ZKDU

1.6E3                               ATHALF

2.41E-03   226.   1.0e6            QI, ZMW, SL

1.9   .1   0.                       RHOA, PHI, AKD

9.   4.   1.   570.0               AX, AY, VX

15.0   5.8                          THICK, DEPTH

2   1                               IMODE, IMODEL

9E2   2.   7.58E5   .41   0.   165.   RMI, TOPER, PNDFLX, THETAP, EVAP, WAEFF

3e2                                 SFACTOR

3.65  0.  0.                        XD, YD

70.  2.55e4  2.  350.  30.  4.e-3 1.0e-4   1. BW AT WI EF ED DLIM CRISK HQ

1   6   7   1.0e-6                 ISOLVE, JSTART, JMAX, EPS

1                                   NTIMES
```

TIME OF RUN 12:11:20.5

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-ra6-r.inp

OUTPUT FILE NAME: 25-ra6-r.out

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****

*   *

*   This output was produced by the model: *

*   *

```
*              GWSCREEN                       *

*       Version Control Copy, Version 2.4a    *

*    A semi-analytical model for the assessment  *

*    of the groundwater pathway from the leaching *

*    of surficial and buried contamination and   *

*  release of contaminants from percolation ponds *

*                 02-28-95                    *

*              Arthur S. Rood                 *

*       Idaho National Engineering Laboratory *

*              EG&G Idaho Inc.                *

*    Subsurface and Environmental Modeling Unit  *

*              PO Box 1625                    *

*         Idaho Falls, Idaho 83415            *

*********************************************************

>>> TITLE OF PROJECT:

'Ra-226 Group 1, base sed, risk'                TITLE

~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~

GAUSSIAN QUADRATURE SOLUTION

MODEL OPTIONS

IMODE: 2

KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC

IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE
FUNCTION

ITYPE:0 (0) VERT AVG; (1) NON-VERT AVG; (2) AVG FROM 0 TO ZD

>>> INPUT DATA

*********************************************************

NUMBER OF RADIOACTIVE PROGENY                    0

LENGTH OF SOURCE PARALLEL TO GW FLOW (m)        7.30E+00
```

```
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)    4.90E+00

THICKNESS OF SOURCE (m)                         1.50E+00

PERCOLATION RATE (darcy vel m/y)                1.00E-01

VOLUMETRIC WATER CONTENT IN SOURCE              4.10E-01

VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE    4.10E-01

BULK DENSITY AT SOURCE  (g/cm**3)               1.50E+00

SORPTION COEFFICIENT AT SOURCE (ml/g)           0.00E+00

BULK DENSITY IN UNSAT ZONE (g/cm**3)            1.90E+00

UNSATURATED ZONE THICKNESS (m)                  5.80E+00

SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)       0.00E+00

OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)  0.00E+00

INITIAL MASS OR ACTIVITY (mg or Ci)             2.41E-03

MOLECULAR WEIGHT (g/mole)                       2.26E+02

SOLUBILITY LIMIT (mg/L)                         1.00E+06

HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)     1.60E+03

BULK DENSITY OF AQUIFER (g/cm**3)               1.90E+00

POROSITY OF AQUIFER                             1.00E-01

SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)       0.00E+00

DISPERSIVITY X DIRECTION (m)                    9.00E+00

DISPERSIVITY Y DIRECTION (m)                    4.00E+00

DISPERSIVITY Z DIRECTION (m)                    1.00E+00

PORE VELOCITY   (m/y)                           5.70E+02

WELL SCREEN THICKNESS (m)                       1.50E+01

DISTANCE TO RECEPTOR ALONG X AXIS        (m)    3.65E+00

DISTANCE TO RECEPTOR ALONG Y AXIS        (m)    0.00E+00

DISTANCE TO RECEPTOR ALONG Z AXIS        (m)    0.00E+00

RADIOLOGICAL CARCINOGENIC SLOPE FACTOR (1/Ci)   3.00E+02

UNITS OF CONTAMINANT                            Ci
```

~~~~~~

LIMITING SOIL CONCENTRATION CALCULATION

>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   2.44E+00

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y)   1.6260E-01

UNSATURATED PORE VELOCITY (m/y)   2.4390E-01

DECAY CONSTANT(S) (1/y)   4.3322E-04

RETARDATION FACTOR(S) (SATURATED)   1.0000E+00

RETARDATION FACTOR (UNSATURATED)   1.0000E+00

SOLUBILITY LIMITED MASS (mg)   2.1999E+10

SOLUBILITY LIMITED ACTIVITY (Ci)   2.1767E+07

TRANSIT TIME IN UNSAT ZONE (years)   2.3780E+01

FRACTION DECAYED DURING UNSAT TRANSPORT 1.0249E-02

~~~~~~

>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION

****

INTEGRATION TIME (years)   30

BODY WEIGHT (kg)   7.000E+01

AVERAGING TIME (days)   2.550E+04

WATER INTAKE RATE (L/d)   2.000E+00

EXPOSURE FREQUENCY (days/year)   3.500E+02

EXPOSURE DURATION (years)   3.000E+01

RADIOLOGICAL DOSE LIMIT (rem/y)   4.000E-03

CARCINOGENIC RISK CRITERIA   1.000E-04

HAZARD QUOTIENT   1.000E+00

~~~~~~

>>> RESULTS OF CALCULATIONS

****

CARCINOGENIC RISK CALCULATION FOR RADIONUCLIDES

MAXIMUM GW CONCENTRATION FOR MBR #1: 2.31E-11 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 4.77E-12 Ci/L RISK = 3.00E-05

MAXIMUM CARCINOGENIC RISK: 3.00E-05

LIMITING PARENT GROUNDWATER CONC. (Ci/L): 1.59E-11

PEAK TIME (y):   2.385680E+01

LIMITING SOIL CONCENTRATION (Ci/m**3):   1.495E-04

LIMITING SOIL CONCENTRATION (Ci/kg):   9.965E-08

LIMITING INVENTORY IN SOIL (Ci):   8.020E-03

LIMITING INVENTORY IN SOIL (mg):   8.105E+00

SPECIFIC ACTIVITY (Ci/g): 9.895E-01

EXECUTION TIME (seconds)   0

```
'Sr-90, ARA-25, risk'                             TITLE

1   0                                         KFLAG, NPROG

30  0                                           INTIME

7.3 4.9  1.5                               AL, WA, THICKS

0.1    .41    .41                          PERC, THETAS, THETAU

1.5  24.   0.                                RHOS, ZKDS, RC2

1.9   2.4                                      RHOU, ZKDU

2.86E1                                         ATHALF

5.91E-03  90.  1.0e6                        QI, ZMW, SL

1.9  .1   2.4                                RHOA, PHI, AKD

9.   4.   1.  570.0                            AX, AY, VX

15.0   5.8                                    THICK, DEPTH

2   1                                        IMODE, IMODEL

9E2   2.   7.58E5  .41  0.   165.     RMI, TOPER, PNDFLX, THETAP, EVAP, WAEFF

5.6e+1                                         SFACTOR

3.65  0.  0.                                   XD, YD

70.  2.55e4   2.  350.  30.  4.e-3  1.0e-4   1. BW AT WI EF ED DLIM CRISK HQ

1   6   7   1.0e-6                       ISOLVE, JSTART, JMAX, EPS

1                                              NTIMES
```

TIME OF RUN 12:10:39.3

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-sr9-r.inp

OUTPUT FILE NAME: 25-sr9-r.out

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*   *

*   This output was produced by the model: *

*   *

```
*               GWSCREEN                    *

*        Version Control Copy, Version 2.4a    *

*     A semi-analytical model for the assessment   *

*     of the groundwater pathway from the leaching *

*     of surficial and buried contamination and    *

*   release of contaminants from percolation ponds *

*                  02-28-95                   *

*                Arthur S. Rood               *

*        Idaho National Engineering Laboratory    *

*                EG&G Idaho Inc.              *

*     Subsurface and Environmental Modeling Unit   *

*                 PO Box 1625                  *

*           Idaho Falls, Idaho 83415           *

****************************************************
```

>>> TITLE OF PROJECT:

'Sr-90, ARA-25, risk'   TITLE

~~~~~~

GAUSSIAN QUADRATURE SOLUTION

MODEL OPTIONS

IMODE: 2

KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC

IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION

ITYPE:0 (0) VERT AVG; (1) NON-VERT AVG; (2) AVG FROM 0 TO ZD

>>> INPUT DATA

****

NUMBER OF RADIOACTIVE PROGENY   0

LENGTH OF SOURCE PARALLEL TO GW FLOW (m)   7.30E+00

```
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)      4.90E+00

THICKNESS OF SOURCE (m)                           1.50E+00

PERCOLATION RATE (darcy vel m/y)                  1.00E-01

VOLUMETRIC WATER CONTENT IN SOURCE                4.10E-01

VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE      4.10E-01

BULK DENSITY AT SOURCE  (g/cm**3)                 1.50E+00

SORPTION COEFFICIENT AT SOURCE (ml/g)             2.40E+01

BULK DENSITY IN UNSAT ZONE (g/cm**3)              1.90E+00

UNSATURATED ZONE THICKNESS (m)                    5.80E+00

SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)         2.40E+00

OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00

INITIAL MASS OR ACTIVITY (mg or Ci)               5.91E-03

MOLECULAR WEIGHT (g/mole)                         9.00E+01

SOLUBILITY LIMIT (mg/L)                           1.00E+06

HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)       2.86E+01

BULK DENSITY OF AQUIFER (g/cm**3)                 1.90E+00

POROSITY OF AQUIFER                               1.00E-01

SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)         2.40E+00

DISPERSIVITY X DIRECTION (m)                      9.00E+00

DISPERSIVITY Y DIRECTION (m)                      4.00E+00

DISPERSIVITY Z DIRECTION (m)                      1.00E+00

PORE VELOCITY  (m/y)                              5.70E+02

WELL SCREEN THICKNESS (m)                         1.50E+01

DISTANCE TO RECEPTOR ALONG X AXIS        (m)      3.65E+00

DISTANCE TO RECEPTOR ALONG Y AXIS        (m)      0.00E+00

DISTANCE TO RECEPTOR ALONG Z AXIS        (m)      0.00E+00

RADIOLOGICAL CARCINOGENIC SLOPE FACTOR (1/Ci)     5.60E+01

UNITS OF CONTAMINANT                              Ci
```

~~~~~~

LIMITING SOIL CONCENTRATION CALCULATION

>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   4.25E-02

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y)   1.8310E-03

UNSATURATED PORE VELOCITY (m/y)   2.4390E-01

DECAY CONSTANT(S) (1/y)   2.4236E-02

RETARDATION FACTOR(S) (SATURATED)   4.6600E+01

RETARDATION FACTOR (UNSATURATED)   1.2122E+01

SOLUBILITY LIMITED MASS (mg)   1.9536E+12

SOLUBILITY LIMITED ACTIVITY (Ci)   2.7155E+11

TRANSIT TIME IN UNSAT ZONE (years)   2.8826E+02

FRACTION DECAYED DURING UNSAT TRANSPORT 9.9908E-01

~~~~~~

>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION

****

INTEGRATION TIME (years)   30

BODY WEIGHT (kg)   7.000E+01

AVERAGING TIME (days)   2.550E+04

WATER INTAKE RATE (L/d)   2.000E+00

EXPOSURE FREQUENCY (days/year) 3.500E+02

EXPOSURE DURATION (years)   3.000E+01

RADIOLOGICAL DOSE LIMIT (rem/y) 4.000E-03

CARCINOGENIC RISK CRITERIA   1.000E-04

HAZARD QUOTIENT   1.000E+00

~~~~~~

>>> RESULTS OF CALCULATIONS

****

CARCINOGENIC RISK CALCULATION FOR RADIONUCLIDES

MAXIMUM GW CONCENTRATION FOR MBR #1: 5.50E-16 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 4.23E-16 Ci/L RISK = 4.98E-10

MAXIMUM CARCINOGENIC RISK: 4.98E-10

LIMITING PARENT GROUNDWATER CONC. (Ci/L): 8.50E-11

PEAK TIME (y):   2.918318E+02

LIMITING SOIL CONCENTRATION (Ci/m**3):   2.214E+01

LIMITING SOIL CONCENTRATION (Ci/kg):   1.476E-02

LIMITING INVENTORY IN SOIL (Ci):   1.188E+03

LIMITING INVENTORY IN SOIL (mg):   8.546E+03

SPECIFIC ACTIVITY (Ci/g): 1.390E+02

EXECUTION TIME (seconds)   0

```
'U-235, ARA-25, risk'                              TITLE

1   0                                      KFLAG, NPROG

30  0                                       INTIME .

7.3 4.9  1.5                           AL, WA, THICKS

0.1   .41   .41                        PERC, THETAS, THETAU

1.5   6.   0.                          RHOS, ZKDS, RC2

1.9   0.6                               RHOU, ZKDU

7.04E8                                  ATHALF

2.21E-04   235.   1.0e6                 QI, ZMW, SL

1.9   .1   0.6                           RHOA, PHI, AKD

9.   4.   1.   570.0                      AX, AY, VX

15.0   5.8                              THICK, DEPTH

2   1                                   IMODE, IMODEL

9E2   2.   7.58E5   .41   0.   165.    RMI, TOPER, PNDFLX, THETAP, EVAP, WAEFF

4.7E+1                                   SFACTOR

3.65 0.  0.                              XD, YD

70. 2.55e4   2.  350.  30.  4.e-3  1.0e-4   1. BW AT WI EF ED DLIM CRISK HQ

1   6   7   1.0e-6                       ISOLVE, JSTART, JMAX, EPS

1                                       NTIMES
```

TIME OF RUN 12:11:51.5

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-u5-r.inp

OUTPUT FILE NAME: 25-u5-r.out

==

ACKNOWLEDGEMENT OF GOVERNMENT SPONSORSHIP AND

LIMITATION OF LIABILITY

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*****************************************************
*                                                   *
*       This output was produced by the model:      *
*                                                   *
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*              GWSCREEN                      *

*      Version Control Copy, Version 2.4a    *

*    A semi-analytical model for the assessment  *

*    of the groundwater pathway from the leaching *

*    of surficial and buried contamination and   *

*  release of contaminants from percolation ponds *

*                02-28-95                    *

*              Arthur S. Rood                *

*      Idaho National Engineering Laboratory *

*              EG&G Idaho Inc.               *

*    Subsurface and Environmental Modeling Unit *

*              PO Box 1625                   *

*          Idaho Falls, Idaho 83415          *

*******************************************************
```

>>> TITLE OF PROJECT:

'U-235, ARA-25, risk'   TITLE

~~~~~~

GAUSSIAN QUADRATURE SOLUTION

MODEL OPTIONS

IMODE: 2

KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC

IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE
FUNCTION

ITYPE:0 (0) VERT AVG; (1) NON-VERT AVG; (2) AVG FROM 0 TO ZD

>>> INPUT DATA

****

NUMBER OF RADIOACTIVE PROGENY   0

LENGTH OF SOURCE PARALLEL TO GW FLOW (m)   7.30E+00

```
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)      4.90E+00

THICKNESS OF SOURCE (m)                           1.50E+00

PERCOLATION RATE (darcy vel m/y)                  1.00E-01

VOLUMETRIC WATER CONTENT IN SOURCE                4.10E-01

VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE      4.10E-01

BULK DENSITY AT SOURCE  (g/cm**3)                 1.50E+00

SORPTION COEFFICIENT AT SOURCE (ml/g)             6.00E+00

BULK DENSITY IN UNSAT ZONE (g/cm**3)              1.90E+00

UNSATURATED ZONE THICKNESS (m)                    5.80E+00

SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)         6.00E-01

OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)    0.00E+00

INITIAL MASS OR ACTIVITY (mg or Ci)               2.21E-04

MOLECULAR WEIGHT (g/mole)                         2.35E+02

SOLUBILITY LIMIT (mg/L)                           1.00E+06

HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)       7.04E+08

BULK DENSITY OF AQUIFER (g/cm**3)                 1.90E+00

POROSITY OF AQUIFER                               1.00E-01

SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)         6.00E-01

DISPERSIVITY X DIRECTION (m)                      9.00E+00

DISPERSIVITY Y DIRECTION (m)                      4.00E+00

DISPERSIVITY Z DIRECTION (m)                      1.00E+00

PORE VELOCITY  (m/y)                              5.70E+02

WELL SCREEN THICKNESS (m)                         1.50E+01

DISTANCE TO RECEPTOR ALONG X AXIS        (m)      3.65E+00

DISTANCE TO RECEPTOR ALONG Y AXIS        (m)      0.00E+00

DISTANCE TO RECEPTOR ALONG Z AXIS        (m)      0.00E+00

RADIOLOGICAL CARCINOGENIC SLOPE FACTOR (1/Ci)     4.70E+01

UNITS OF CONTAMINANT                              Ci
```

~~~~~~

LIMITING SOIL CONCENTRATION CALCULATION

>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   1.02E+05

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y)   7.0847E-03

UNSATURATED PORE VELOCITY (m/y)   2.4390E-01

DECAY CONSTANT(S) (1/y)   9.8458E-10

RETARDATION FACTOR(S) (SATURATED)   1.2400E+01

RETARDATION FACTOR (UNSATURATED)   3.7805E+00

SOLUBILITY LIMITED MASS (mg)   5.0489E+11

SOLUBILITY LIMITED ACTIVITY (Ci)   1.0919E+03

TRANSIT TIME IN UNSAT ZONE (years)   8.9900E+01

FRACTION DECAYED DURING UNSAT TRANSPORT 8.8514E-08

~~~~~~

>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION

****

INTEGRATION TIME (years)   30

BODY WEIGHT (kg)   7.000E+01

AVERAGING TIME (days)   2.550E+04

WATER INTAKE RATE (L/d)   2.000E+00

EXPOSURE FREQUENCY (days/year)   3.500E+02

EXPOSURE DURATION (years)   3.000E+01

RADIOLOGICAL DOSE LIMIT (rem/y)   4.000E-03

CARCINOGENIC RISK CRITERIA   1.000E-04

HAZARD QUOTIENT   1.000E+00

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>>> RESULTS OF CALCULATIONS

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CARCINOGENIC RISK CALCULATION FOR RADIONUCLIDES

MAXIMUM GW CONCENTRATION FOR MBR #1: 9.38E-14 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 8.81E-14 Ci/L RISK = 8.70E-08

MAXIMUM CARCINOGENIC RISK: 8.70E-08

LIMITING PARENT GROUNDWATER CONC. (Ci/L): 1.01E-10

PEAK TIME (y):   9.085228E+01

LIMITING SOIL CONCENTRATION (Ci/m**3): 4.735E-03

LIMITING SOIL CONCENTRATION (Ci/kg):   3.156E-06

LIMITING INVENTORY IN SOIL (Ci):   2.540E-01

LIMITING INVENTORY IN SOIL (mg):   1.175E+08

SPECIFIC ACTIVITY (Ci/g): 2.163E-06

EXECUTION TIME (seconds)   0