

TIME OF RUN 12:08:37.2

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-co6-r.inp

OUTPUT FILE NAME: 25-co6-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:

```

'Co-60, 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)	1.00E+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)	1.00E+00
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y** ⁻¹)	0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)	1.58E-04
MOLECULAR WEIGHT (g/mole)	6.00E+01
SOLUBILITY LIMIT (mg/L)	1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)	5.27E+00
BULK DENSITY OF AQUIFER (g/cm**3)	1.90E+00
POROSITY OF AQUIFER	1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)	1.00E+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)	1.90E+01
UNITS OF CONTAMINANT	Ci

LIMITING SOIL CONCENTRATION CALCULATION

>>> INITIAL ACTIVITY CONVERTED TO MASS (mg) 1.40E-04

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	4.3262E-03
UNSATURATED PORE VELOCITY (m/y)	2.4390E-01
DECAY CONSTANT(S) (1/y)	1.3153E-01
RETARDATION FACTOR(S) (SATURATED)	2.0000E+01
RETARDATION FACTOR (UNSATURATED)	5.6341E+00
SOLUBILITY LIMITED MASS (mg)	8.2682E+11
SOLUBILITY LIMITED ACTIVITY (Ci)	9.3558E+11
TRANSIT TIME IN UNSAT ZONE (years)	1.3398E+02
FRACTION DECAYED DURING UNSAT TRANSPORT	1.0000E+00

>>> 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: 7.60E-22 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 2.22E-22 Ci/L RISK = 8.86E-17

MAXIMUM CARCINOGENIC RISK: 8.86E-17

LIMITING PARENT GROUNDWATER CONC. (Ci/L): 2.51E-10

PEAK TIME (y): 1.350270E+02

LIMITING SOIL CONCENTRATION (Ci/m**3): 3.324E+06

LIMITING SOIL CONCENTRATION (Ci/kg): 2.216E+03

LIMITING INVENTORY IN SOIL (Ci): 1.783E+08

LIMITING INVENTORY IN SOIL (mg): 1.576E+08

SPECIFIC ACTIVITY (Ci/g): 1.132E+03

EXECUTION TIME (seconds) 0

'Cs-134, 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	500.	0.								RHOS, ZKDS, RC2					
1.9	50.									RHOU, ZKDU					
2.06										ATHALF					
8.44E-05	134.	1.0e6								QI, ZMW, SL					
1.9	.1	50.								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+01										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												
1															

TIME OF RUN 12:09:03.2

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-cs4-r.inp

OUTPUT FILE NAME: 25-cs4-r.out

=====

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* * * * *

```

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*           02-28-95           *
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*           Arthur S. Rood           *
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*           Idaho National Engineering Laboratory *
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*           EG&G Idaho Inc.           *
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*           Subsurface and Environmental Modeling Unit *
*
*           PO Box 1625           *
*
*           Idaho Falls, Idaho 83415           *

```

>>> TITLE OF PROJECT:

```

'Cs-134, 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)	5.00E+02
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+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y** -1)	0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)	8.44E-05
MOLECULAR WEIGHT (g/mole)	1.34E+02
SOLUBILITY LIMIT (mg/L)	1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)	2.06E+00
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+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) 6.51E-05

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	8.8840E-05
UNSATURATED PORE VELOCITY (m/y)	2.4390E-01
DECAY CONSTANT(S) (1/y)	3.3648E-01
RETARDATION FACTOR(S) (SATURATED)	9.5100E+02
RETARDATION FACTOR (UNSATURATED)	2.3271E+02
SOLUBILITY LIMITED MASS (mg)	4.0263E+13
SOLUBILITY LIMITED ACTIVITY (Ci)	5.2188E+13
TRANSIT TIME IN UNSAT ZONE (years)	5.5338E+03
FRACTION DECAYED DURING UNSAT TRANSPORT	1.0000E+00

>>> 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: 4.40-234 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 9.16-235 Ci/L RISK = 9.04-229

MAXIMUM CARCINOGENIC RISK: 9.04-229

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

PEAK TIME (y): 5.535852E+03

LIMITING SOIL CONCENTRATION (Ci/m**3): 1.739+218

LIMITING SOIL CONCENTRATION (Ci/kg): 1.159+215

LIMITING INVENTORY IN SOIL (Ci): 9.332+219

LIMITING INVENTORY IN SOIL (mg): 7.200+219

SPECIFIC ACTIVITY (Ci/g): 1.296E+03

NOTE: THE LIMITING SOIL CONCENTRATION OF 1.159+212 Ci/g

EXCEEDS THE SPECIFIC ACTIVITY OF THE NUCLIDE.

WARNING !!! THE LIMITING SOIL MASS OF 7.200+219 mg

EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 4.026E+13 mg

EXECUTION TIME (seconds) 0

TIME OF RUN 12:09:21.0

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-cs7-r.inp

OUTPUT FILE NAME: 25-cs7-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:

```

'Cs-137, 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)	5.00E+02
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+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)	0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)	3.64E-02
MOLECULAR WEIGHT (g/mole)	1.37E+02
SOLUBILITY LIMIT (mg/L)	1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)	3.02E+01
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+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)	3.20E+01
UNITS OF CONTAMINANT	Ci

LIMITING SOIL CONCENTRATION CALCULATION

>>> INITIAL ACTIVITY CONVERTED TO MASS (mg) 4.21E-01

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	8.8840E-05
UNSATURATED PORE VELOCITY (m/y)	2.4390E-01
DECAY CONSTANT(S) (1/y)	2.2952E-02
RETARDATION FACTOR(S) (SATURATED)	9.5100E+02
RETARDATION FACTOR (UNSATURATED)	2.3271E+02
SOLUBILITY LIMITED MASS (mg)	4.0263E+13
SOLUBILITY LIMITED ACTIVITY (Ci)	3.4819E+12
TRANSIT TIME IN UNSAT ZONE (years)	5.5338E+03
FRACTION DECAYED DURING UNSAT TRANSPORT	1.0000E+00

>>> 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: 6.96E-69 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 6.06E-69 Ci/L RISK = 4.08E-63

MAXIMUM CARCINOGENIC RISK: 4.08E-63

LIMITING PARENT GROUNDWATER CONC. (Ci/L): 1.49E-10

PEAK TIME (y): 5.547910E+03

LIMITING SOIL CONCENTRATION (Ci/m**3): 1.665E+55

LIMITING SOIL CONCENTRATION (Ci/kg): 1.110E+52

LIMITING INVENTORY IN SOIL (Ci): 8.931E+56

LIMITING INVENTORY IN SOIL (mg): 1.033E+58

SPECIFIC ACTIVITY (Ci/g): 8.648E+01

NOTE: THE LIMITING SOIL CONCENTRATION OF 1.110E+49 Ci/g

EXCEEDS THE SPECIFIC ACTIVITY OF THE NUCLIDE.

WARNING !!! THE LIMITING SOIL MASS OF 1.033E+58 mg

EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 4.026E+13 mg

EXECUTION TIME (seconds) 0

'Eu-152, 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	650.	0.									RHOS, ZKDS, RC2				
1.9	65.										RHOU, ZKDU				
1.36E1											ATHALF				
4.0E-04	152.	1.0e6									QI, ZMW, SL				
1.9	.1	65.									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				
5.7e+0											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												
1															

TIME OF RUN 12:09:39.4

DATE OF RUN 01/08/99

INPUT FILE NAME: 25-eu2-r.inp

OUTPUT FILE NAME: 25-eu2-r.out

=====

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* *
* *

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*           02-28-95           *
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*           Idaho National Engineering Laboratory *
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*           EG&G Idaho Inc.           *
*
*           Subsurface and Environmental Modeling Unit *
*
*           PO Box 1625           *
*
*           Idaho Falls, Idaho 83415           *
*
*****

```

>>> TITLE OF PROJECT:

```

'Eu-152, 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)	6.50E+02
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)	6.50E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)	0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)	4.00E-04
MOLECULAR WEIGHT (g/mole)	1.52E+02
SOLUBILITY LIMIT (mg/L)	1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)	1.36E+01
BULK DENSITY OF AQUIFER (g/cm**3)	1.90E+00
POROSITY OF AQUIFER	1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)	6.50E+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)	5.70E+00
UNITS OF CONTAMINANT	Ci

LIMITING SOIL CONCENTRATION CALCULATION

>>> INITIAL ACTIVITY CONVERTED TO MASS (mg) 2.31E-03

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	6.8347E-05
UNSATURATED PORE VELOCITY (m/y)	2.4390E-01
DECAY CONSTANT(S) (1/y)	5.0967E-02
RETARDATION FACTOR(S) (SATURATED)	1.2360E+03
RETARDATION FACTOR (UNSATURATED)	3.0222E+02
SOLUBILITY LIMITED MASS (mg)	5.2336E+13
SOLUBILITY LIMITED ACTIVITY (Ci)	9.0583E+12
TRANSIT TIME IN UNSAT ZONE (years)	7.1868E+03
FRACTION DECAYED DURING UNSAT TRANSPORT	1.0000E+00

>>> 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: 4.75-175 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 3.68-175 Ci/L RISK = 4.41-170

MAXIMUM CARCINOGENIC RISK: 4.41-170

LIMITING PARENT GROUNDWATER CONC. (Ci/L): 8.35E-10

PEAK TIME (y): 7.195601E+03

LIMITING SOIL CONCENTRATION (Ci/m**3): 1.692+160

LIMITING SOIL CONCENTRATION (Ci/kg): 1.128+157

LIMITING INVENTORY IN SOIL (Ci): 9.078+161

LIMITING INVENTORY IN SOIL (mg): 5.245+162

SPECIFIC ACTIVITY (Ci/g): 1.731E+02

NOTE: THE LIMITING SOIL CONCENTRATION OF 1.128+154 Ci/g

EXCEEDS THE SPECIFIC ACTIVITY OF THE NUCLIDE.

WARNING !!! THE LIMITING SOIL MASS OF 5.245+162 mg

EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 5.234E+13 mg

EXECUTION TIME (seconds) 0

'Eu-154, 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	650.	0.									RHOS, ZKDS, RC2				
1.9	65.										RHOU, ZKDU				
8.8											ATHALF				
2.34E-05	154.	1.0e6									QI, ZMW, SL				
1.9	.1	65.									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				
9.4e+0											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												
1															


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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 *

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>>> TITLE OF PROJECT:

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'Eu-154, ARA-25, risk'                TITLE
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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

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NUMBER OF RADIOACTIVE PROGENY          0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)  7.30E+00

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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)	6.50E+02
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)	6.50E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (λ -1)	0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)	2.34E-05
MOLECULAR WEIGHT (g/mole)	1.54E+02
SOLUBILITY LIMIT (mg/L)	1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)	8.80E+00
BULK DENSITY OF AQUIFER (g/cm**3)	1.90E+00
POROSITY OF AQUIFER	1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)	6.50E+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)	9.40E+00
UNITS OF CONTAMINANT	Ci

LIMITING SOIL CONCENTRATION CALCULATION

>>> INITIAL ACTIVITY CONVERTED TO MASS (mg) 8.86E-05

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	6.8347E-05
UNSATURATED PORE VELOCITY (m/y)	2.4390E-01
DECAY CONSTANT(S) (1/y)	7.8767E-02
RETARDATION FACTOR(S) (SATURATED)	1.2360E+03
RETARDATION FACTOR (UNSATURATED)	3.0222E+02
SOLUBILITY LIMITED MASS (mg)	5.2336E+13
SOLUBILITY LIMITED ACTIVITY (Ci)	1.3817E+13
TRANSIT TIME IN UNSAT ZONE (years)	7.1868E+03
FRACTION DECAYED DURING UNSAT TRANSPORT	1.0000E+00

>>> 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: 1.92-234 Ci/L

AVERAGE GW CONCENTRATION FOR MBR #1: 1.25-234 Ci/L RISK = 2.47-229

MAXIMUM CARCINOGENIC RISK: 2.47-229

LIMITING PARENT GROUNDWATER CONC. (Ci/L): 5.07E-10

PEAK TIME (y): 7.193248E+03

LIMITING SOIL CONCENTRATION (Ci/m**3): 1.765+218

LIMITING SOIL CONCENTRATION (Ci/kg): 1.177+215

LIMITING INVENTORY IN SOIL (Ci): 9.471+219

LIMITING INVENTORY IN SOIL (mg): 3.587+220

SPECIFIC ACTIVITY (Ci/g): 2.640E+02

NOTE: THE LIMITING SOIL CONCENTRATION OF 1.177+212 Ci/g

EXCEEDS THE SPECIFIC ACTIVITY OF THE NUCLIDE.

WARNING !!! THE LIMITING SOIL MASS OF 3.587+220 mg

EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 5.234E+13 mg

EXECUTION TIME (seconds) 0

