C A P 8 8 - P C

Version 3.0

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Population Assessment
Nov 18, 2010 08:04 pm

Facility: White Mesa
Address:
City: San Juan
State: UT Zip: 84511

Source Category: Rn-222
Source Type: Stack
Emission Year: 2010

Comments: NA
NA

Dataset Name: White Mesa
Dataset Date: 11/18/2010 7:57:00 PM
Wind File: . C:\Documents and Settings\Administrator.SC&A_MCLEAN.000\Desktop\WMESA.WND
Population File: C:\Program Files\CAP88-PC30\PopFiles\White Mesa new.POP

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)	Collective Population (person-rem/y)
Adrenals	2.52E-03	1.14E-03
B Surfac	5.88E-03	2.81E-03
Breasts	2.95E-03	1.34E-03
St Wall	2.72E-03	1.23E-03
ULI Wall	2.71E-03	1.23E-03
Kidneys	3.11E-03	1.44E-03
Lungs	3.37E-03	1.42E-03
Ovaries	2.64E-03	1.19E-03
R Marrow	3.10E-03	1.42E-03
Spleen	2.99E-03	1.38E-03
Thymus	2.70E-03	1.22E-03
Uterus	2.65E-03	1.20E-03
Bld Wall	2.81E-03	1.27E-03
Brain	2.70E-03	1.22E-03
Esophagu	3.16E-03	1.29E-03
SI Wall	2.69E-03	1.22E-03
LLI Wall	2.77E-03	1.25E-03
Liver	2.90E-03	1.33E-03
Muscle	3.06E-03	1.39E-03
Pancreas	2.56E-03	1.16E-03
Skin	1.69E-02	7.63E-03
Testes	3.07E-03	1.39E-03
Thyroid	2.81E-03	1.27E-03
EFFEC	5.79E-03	2.43E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)	Collective Population (person-rem/y)
INGESTION	1.21E-03	6.58E-04
INHALATION	1.58E-03	4.09E-04
AIR IMMERSION	7.72E-06	2.00E-06
GROUND SURFACE	3.00E-03	1.36E-03

INTERNAL	2.79E-03	1.07E-03
EXTERNAL	3.00E-03	1.36E-03
TOTAL	5.79E-03	2.43E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclides	Selected Individual (mrem/y)	Collective Population (person-rem/y)
Rn-222	7.84E-08	2.77E-08
Po-218	1.66E-08	7.26E-09
Pb-214	1.85E-03	5.62E-04
Bi-214	2.73E-03	1.20E-03
Po-214	1.41E-07	6.39E-08
Pb-210	1.08E-03	5.87E-04
Bi-210	1.85E-06	9.17E-07
Po-210	1.23E-04	7.00E-05
At-218	1.35E-09	5.99E-10
TOTAL	5.79E-03	2.43E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk	Total Collective Population Fatal Cancer Risk (Deaths/y)
Esophagu	3.16E-11	1.89E-10
Stomach	1.25E-10	7.50E-10
Colon	3.34E-10	2.01E-09
Liver	1.39E-10	9.35E-10
LUNG	1.37E-09	5.42E-09
Bone	4.62E-11	3.20E-10
Skin	1.72E-11	1.01E-10
Breast	1.51E-10	8.96E-10
Ovary	4.14E-11	2.47E-10
Bladder	7.50E-11	4.48E-10
Kidneys	7.82E-11	5.34E-10
Thyroid	1.01E-11	6.07E-11
Leukemia	1.85E-10	1.11E-09
Residual	4.60E-10	2.76E-09
Total	3.06E-09	1.58E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk	Total Collective Population Fatal Cancer Risk (Deaths/y)
INGESTION	4.08E-10	2.88E-09
INHALATION	1.06E-09	3.55E-09
AIR IMMERSION	4.16E-12	1.40E-11
GROUND SURFACE	1.59E-09	9.33E-09
INTERNAL	1.47E-09	6.43E-09
EXTERNAL	1.60E-09	9.35E-09
TOTAL	3.06E-09	1.58E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk	Total Collective Population Fatal Cancer Risk (Deaths/y)
Rn-222	4.26E-14	1.95E-13
Po-218	9.11E-15	5.16E-14
Pb-214	1.21E-09	4.62E-09
Bi-214	1.45E-09	8.28E-09
Po-214	7.74E-14	4.54E-13
Pb-210	3.59E-10	2.52E-09
Bi-210	1.52E-12	1.05E-11
Po-210	4.73E-11	3.47E-10
At-218	6.41E-16	3.68E-15
TOTAL	3.06E-09	1.58E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 500	1500	2500	3500	4500	7500	15000
N	0.0E+00	0.0E+00	1.6E-03	9.8E-04	6.9E-04	3.5E-04	1.5E-04
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-04	0.0E+00
NW	0.0E+00	0.0E+00	1.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-04	0.0E+00
SW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
S	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-04	3.3E-04
SSE	0.0E+00	5.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04
SE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-04
ESE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
E	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ENE	0.0E+00	2.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-04	0.0E+00	1.1E-04
NNE	0.0E+00	0.0E+00	0.0E+00	9.6E-04	0.0E+00	3.5E-04	1.5E-04

Direction	Distance (m) 25000	35000	45000	55000	65000	75000
N	0.0E+00	0.0E+00	4.0E-05	3.2E-05	0.0E+00	2.2E-05
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-05	0.0E+00
NW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	2.5E-05	1.9E-05	1.5E-05	0.0E+00	1.0E-05
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SW	0.0E+00	7.3E-05	0.0E+00	3.9E-05	2.8E-05	2.3E-05
SSW	0.0E+00	1.4E-04	1.0E-04	7.4E-05	5.4E-05	4.5E-05
S	1.6E-04	1.0E-04	7.3E-05	5.5E-05	3.9E-05	3.3E-05
SSE	9.8E-05	6.5E-05	4.7E-05	3.6E-05	2.6E-05	2.2E-05
SE	6.8E-05	4.6E-05	3.4E-05	2.6E-05	1.9E-05	1.6E-05
ESE	4.2E-05	2.9E-05	2.2E-05	1.7E-05	1.3E-05	1.2E-05
E	0.0E+00	2.9E-05	2.2E-05	1.8E-05	1.4E-05	1.3E-05
ENE	4.3E-05	3.0E-05	2.3E-05	1.8E-05	1.5E-05	1.3E-05
NE	5.7E-05	3.9E-05	3.0E-05	2.4E-05	1.9E-05	1.7E-05
NNE	7.9E-05	5.4E-05	4.1E-05	3.3E-05	2.6E-05	2.3E-05

COLLECTIVE EFFECTIVE DOSE EQUIVALENT (person rem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	500	1500	2500	3500	4500	7500	15000
N	0.0E+00	0.0E+00	4.8E-06	6.8E-05	3.9E-04	9.9E-04	1.1E-05
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-06	0.0E+00
NW	0.0E+00	0.0E+00	6.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-07	0.0E+00
SW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
S	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-06	8.0E-05
SSE	0.0E+00	2.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-06
SE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-06
ESE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
E	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ENE	0.0E+00	2.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.1E-05	0.0E+00	1.1E-07
NNE	0.0E+00	0.0E+00	0.0E+00	7.6E-05	0.0E+00	8.7E-06	2.4E-06

	Distance (m)					
Direction	25000	35000	45000	55000	65000	75000
N	0.0E+00	0.0E+00	2.4E-07	1.3E-07	0.0E+00	6.1E-07
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-07	0.0E+00
NW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	2.0E-07	1.5E-07	3.0E-08	0.0E+00	2.1E-08
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SW	0.0E+00	1.5E-07	0.0E+00	3.4E-06	9.7E-06	4.5E-06
SSW	0.0E+00	2.7E-05	1.6E-05	1.4E-06	9.5E-06	1.6E-05
S	1.6E-07	3.1E-05	7.7E-06	1.4E-05	1.9E-05	2.0E-05
SSE	6.1E-06	4.6E-05	2.0E-05	4.1E-06	4.1E-06	1.2E-05
SE	5.7E-06	1.1E-05	2.9E-05	8.8E-06	2.7E-07	8.2E-08
ESE	1.3E-07	2.3E-07	4.8E-07	2.4E-06	3.1E-06	3.6E-05
E	0.0E+00	5.8E-08	3.0E-06	2.3E-06	6.6E-06	1.7E-05
ENE	3.0E-07	7.8E-07	2.0E-06	1.9E-05	2.5E-06	7.9E-08
NE	5.7E-07	3.9E-06	2.7E-06	4.0E-06	1.3E-06	1.0E-07
NNE	4.8E-06	1.1E-04	2.1E-06	2.9E-07	2.1E-07	2.3E-08

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 500	1500	2500	3500	4500	7500	15000
N	0.0E+00	0.0E+00	8.3E-10	5.0E-10	3.5E-10	1.8E-10	7.6E-11
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-10	0.0E+00
NW	0.0E+00	0.0E+00	6.1E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-10	0.0E+00
SW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
S	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-10	1.7E-10
SSE	0.0E+00	3.1E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-10
SE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-11
ESE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
E	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ENE	0.0E+00	1.1E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-10	0.0E+00	5.4E-11
NNE	0.0E+00	0.0E+00	0.0E+00	4.9E-10	0.0E+00	1.7E-10	7.4E-11

Direction	Distance (m) 25000	35000	45000	55000	65000	75000
N	0.0E+00	0.0E+00	1.9E-11	1.5E-11	0.0E+00	9.9E-12
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.2E-12	0.0E+00
NW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	1.2E-11	8.7E-12	6.6E-12	0.0E+00	4.2E-12
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SW	0.0E+00	3.7E-11	0.0E+00	1.9E-11	1.3E-11	1.1E-11
SSW	0.0E+00	7.1E-11	5.0E-11	3.7E-11	2.7E-11	2.2E-11
S	7.9E-11	5.2E-11	3.7E-11	2.7E-11	1.9E-11	1.6E-11
SSE	4.9E-11	3.2E-11	2.3E-11	1.7E-11	1.2E-11	1.0E-11
SE	3.4E-11	2.3E-11	1.6E-11	1.2E-11	8.7E-12	7.3E-12
ESE	2.0E-11	1.4E-11	1.0E-11	7.8E-12	5.8E-12	5.0E-12
E	0.0E+00	1.4E-11	1.0E-11	8.0E-12	6.2E-12	5.4E-12
ENE	2.1E-11	1.4E-11	1.1E-11	8.4E-12	6.6E-12	5.7E-12
NE	2.8E-11	1.9E-11	1.4E-11	1.1E-11	8.7E-12	7.5E-12
NNE	3.9E-11	2.6E-11	2.0E-11	1.5E-11	1.2E-11	1.0E-11

COLLECTIVE FATAL CANCER RATE (deaths/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 500	1500	2500	3500	4500	7500	15000
N	0.0E+00	0.0E+00	3.2E-11	4.5E-10	2.6E-09	6.5E-09	7.1E-11
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-11	0.0E+00
NW	0.0E+00	0.0E+00	4.1E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-12	0.0E+00
SW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
S	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-11	5.4E-10
SSE	0.0E+00	2.0E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-11
SE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-11
ESE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
E	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ENE	0.0E+00	2.0E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-10	0.0E+00	7.0E-13
NNE	0.0E+00	0.0E+00	0.0E+00	5.0E-10	0.0E+00	5.7E-11	1.5E-11

Direction	Distance (m) 25000	35000	45000	55000	65000	75000
N	0.0E+00	0.0E+00	1.5E-12	7.7E-13	0.0E+00	3.6E-12
NNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-12	0.0E+00
NW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
WNW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	0.0E+00	1.2E-12	9.0E-13	1.7E-13	0.0E+00	1.1E-13
WSW	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SW	0.0E+00	9.5E-13	0.0E+00	2.1E-11	5.9E-11	2.7E-11
SSW	0.0E+00	1.8E-10	1.1E-10	9.1E-12	6.0E-11	1.0E-10
S	1.0E-12	2.1E-10	5.0E-11	9.3E-11	1.2E-10	1.3E-10
SSE	4.0E-11	3.0E-10	1.3E-10	2.6E-11	2.5E-11	7.1E-11
SE	3.7E-11	6.8E-11	1.8E-10	5.4E-11	1.6E-12	4.8E-13
ESE	7.9E-13	1.4E-12	2.9E-12	1.4E-11	1.7E-11	2.0E-10
E	0.0E+00	3.6E-13	1.8E-11	1.4E-11	3.7E-11	9.5E-11
ENE	1.9E-12	4.8E-12	1.2E-11	1.1E-10	1.4E-11	4.4E-13
NE	3.6E-12	2.4E-11	1.7E-11	2.4E-11	7.5E-12	5.9E-13
NNE	3.1E-11	6.9E-10	1.3E-11	1.8E-12	1.3E-12	1.3E-13