0000114603

CORRES. CONTROL
INCOMING LTR NO.

4304 RF 93

DUE
DATE

ACTION
DIST. LTR ENC
BENEDETTI, R.L.
BENJAMIN, A.
BERMAN, H.S.
CARNIVAL, G.J.
COPP, R.D.
CORDOVA, R.C.
DAVIS, J.G.
FERRERA, D.W.
FRANZ, W.A.
HANNI, B.J.
HEALY, T.J.
HEDAHL, T.G.
HILBIG, J.G.
KIRBY, W.A.
KUESTER, A.W.
MANN, H.P.
MARX, G.E.
McKENNA, F.G.
MORGAN, R.V.
PIZZUTO, V.M.
POTTER, G.L.
RILEY, J.H.
SANDLIN, N.B.
SATTERWHITE, D.G.
SCHUBERT, A.L.
SETLOCK, G.H.
SULLIVAN, M.T.
SWANSON, E.R.
WILKINSON, R.B.
WILSON, J.M.
Guillaume M X X
Hutchins N X X
Busby W X X

CORRES CONTROL x x
PATS/T130G
Adm Rec. X X

Reviewed for Addressee
Corres. Control RFP

9-28-93
DATE BY

Ref Ltr. #

DOE ORDER # 5400

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

SEP 28 1 07 PM '93

SEP 20 1993

EG&G
ROCKY FLATS PLANT
CORRESPONDENCE CONTROL

Ref: 8HWM-FF

Mr. Richard Schassburger
U.S. Department of Energy
Rocky Flats Office
Golden, CO 80402-0928

Re: Areas of Concern,
Operable Unit 3

Dear Mr. Schassburger:

EPA has reviewed the "Identification of Operable Unit No. 3 Area of Concern, Draft Report" (July, 1993) submitted by the Department of Energy (DOE). This letter notifies you of our approval of this document. EPA requested that DOE prepare this document to identify areas within Operable Unit 3 (OU 3) where activities (e.g., land development, construction, recreation) may need to be restricted due to the existing soil contamination levels. We are interested both in ensuring that activities pose no unacceptable risks to nearby residents and other potential receptors, and that the further spread of contamination is prevented. Our authority to require DOE to produce this document comes from the Comprehensive Environmental Response, Compensation, and Liability Act, or Superfund.

As part of our review, EPA independently verified DOE's conclusions about an area of concern within OU 3. We chose to perform independent calculations because the assumptions used by DOE in the document, while consistent with the final Past Remedy Report, are slightly different from recently issued EPA guidance We believe that a comparison of plutonium concentrations to risk based concentrations calculated in accordance with the latest EP guidance is appropriate because it more closely follows the Superfund remedy selection process described in the National Contingency Plan (55 Federal Register 8848 (March 8, 1990)).

Although our two agencies used slightly different methodologies, EPA's conclusions are in agreement with DOE's residential "Case A" (9 years of exposure, conservative exposure assumptions) conclusions. The enclosed EPA calculations indicat that areas with plutonium concentrations above 2 picocuries per gram of soil (pCi/gm) and/or americium concentrations above 0.2 pCi/gm are areas of concern within OU 3. The term "area of concern" means that these areas will require further investigation before it can be stated that unrestricted activities pose no unacceptable risks.

We agree that, based on available data, and considering both agencies' calculations, the area of concern is confined to the small uninhabited area immediately adjacent to the Rocky Flats Plant east boundary. We have conservatively chosen this area based on an assumption of residential land use. As correctly noted in your document, there are qualifications to this conclusion. This area of concern addresses only the risks from surface soils affected by plutonium and americium. The results of the Remedial Investigation/Feasibility Study (RI/FS) of OU 3 will provide more current and comprehensive information (multiple contaminant, multiple exposure pathway, exposure scenario considerations) on which to make risk management decisions. This conservative estimate of the area of concern is provided in the interim until completion of the RI/FS.

The final document adequately addresses comments made by EPA on the draft versions. Therefore, EPA approves the "Identification of Operable Unit No. 3 Area of Concern Report".

Any questions or concerns about EPA's comments can be directed to Bonnie Lavelle, (303) 294-1067.

Sincerely,

Martin Hestmark

Martin Hestmark, Manager
Rocky Flats Project

Enclosure

cc: Gary Baughman, CDH
Joe Schieffelin, CDH
Bruce Thatcher, DOE
Bob Birk, DOE
Michael Guillaume, EG&G

RESIDENTIAL EXPOSURE TO RADIONUCLIDES IN SOIL: 9 Year Residence

RS = TR / (SFo x E-3 x EF x IFsoil/adj) + (SFe x E3 x ED x D x SD x (1-Se) x Te) + (SFi x E3 x EF x IRair X (1/PEF))
RS = Radionuclide in Soil

	Americium 24	Americium 241 Soil Conc. (PCi/gm)	Plutonium 239	Plutonium 239 Soil Conc. (pCi/gm)
TR - Target Risk	1E-06	(Risk = E-6) 0.56	1.00E-06	(Risk = E-6) 6.37
SFo - Slope Factor, oral	3.1E-10		3.1E-10	
EF - Exposure Factor	350	(Risk = E-5) 5.63	350	(Risk = E-5) 63.70
IFsoil/adj-Ingestion Factor	1200		1200	
SFe - Slope Factor, external	1.6E-12	(Risk = E-4) 56.25	2.6E-14	(Risk = E-4) 637.00
ED - Exposure Duration	9		9	
D - Depth in Soil	0.1		0.1	
SD - Soil Density	1430		1430	
Se - Shielding Factor	0.8		0.8	
Te - Time Factor	1		1	
SFi - Slope Factor, inhalation	4E-08		4.1E-08	
EF - Exposure Factor	350		350	
IRair - Inhalation Rate	20		20	
PEF - Particulate Emission Factor	4.63E+09		4.63E+09	

RESIDENTIAL EXPOSURE TO RADIONUCLIDES IN SOIL: 30 Year Residence

RS = TR / (SFo x E-3 x EF x IFsoil/adj) + (SFe x E3 x ED x D x SD x (1-Se) x Te) + (SFi x E3 x EF x IRair X (1/PEF))
RS = Radionuclide in Soil

	Americium 24	Americium 241 Soil Conc. (PCi/gm)	Plutonium 239	Plutonium 239 Soil Conc. (pCi/gm)
TR - Target Risk	1E-06	(Risk = E-6) 0.17	1.00E-06	(Risk = E-6) 2.08
SFo - Slope Factor, oral	3.1E-10		3.1E-10	
EF - Exposure Factor	350	(Risk = E-5) 1.70	350	(Risk = E-5) 20.84
IFsoil/adj-Ingestion Factor	3600		3600	
SFe - Slope Factor, external	1.6E-12	(Risk = E-4) 17.00	2.6E-14	(Risk = E-4) 208.40
ED - Exposure Duration	30		30	
D - Depth in Soil	0.1		0.1	
SD - Soil Density	1430		1430	
Se - Shielding Factor	0.8		0.8	
Te - Time Factor	1		1	
SFi - Slope Factor, inhalation	4E-08		4.1E-08	
EF - Exposure Factor	350		350	
IRair - Inhalation Rate	20		20	
PEF - Particulate Emission Factor	4.63E+09		4.63E+09	

RECREATIONAL EXPOSURE TO RADIONUCLIDES IN SOIL

RS = TR / (SFo x E-3 x EF x IFsoil/adj) + (SFe x E3 x ED x D x SD x (1-Se) x Te) + (SFi x E3 x EF x IRair X (1/PEF))
RS = Radionuclide in Soil

	Americium 24	Americium 241 Soil Conc. (PCi/gm)	Plutonium 239	Plutonium 239 Soil Conc. (pCi/gm)
TR - Target Risk	1E-06	(Risk = E-6) 0.18	1.00E-06	(Risk = E-6) 9.96
SFo - Slope Factor, oral	3.1E-10		3.1E-10	
EF - Exposure Factor	60	(Risk = E-5) 1.82	60	(Risk = E-5) 99.60
IFsoil/adj-Ingestion Factor	600		600	
SFe - Slope Factor, external	1.6E-12	(Risk = E-4) 18.17	2.6E-14	(Risk = E-4) 995.99
ED - Exposure Duration	30		30	
D - Depth in Soil	0.1		0.1	
SD - Soil Density	1430		1430	
Se - Shielding Factor	0.8		0.8	
Te - Time Factor	1		1	
SFi - Slope Factor, inhalation	4E-08		4.1E-08	
EF - Exposure Factor	60		60	
IRair - Inhalation Rate	20		20	
PEF - Particulate Emission Factor	4.63E+09		4.63E+09	

COMMERCIAL/INDUSTRIAL EXPOSURE TO RADIONUCLIDES IN SOIL

RS = TR / (3.1E2 (SFo) + (2.7E-2 x SFi) + (2.9E6 x SF3); Reduced Equation
RS = Radionuclide in Soil

	Americium 24	Americium 241 Soil Conc. (pCi/gm)	Plutonium 239	Plutonium 239 Soil Conc. (pCi/gm)
TR - Target Risk	1.00E-06	(Risk = E-6) 0.21	1.00E-6	(Risk = E-6) 5.79
SFo - Slope Factor, ingestion	3.10E-10		3.10E-10	
SFi - Slope Factor, inhalation	4.00E-08	(Risk = E-5) 2.11	4.10E-08	(Risk = E-5) 57.94
SFe - Slope Factor, external	1.60E-12		2.60E-14	
		(Risk = E-4) 211.10		(Risk = E-4) 579.35