061102-061106
File: OU6
Category #: 5.00
Document Date: 4/01/96

APPENDIX D

RISK CALCULATION AND APPROVAL LETTERS

CONFIRMATION NOTICE NO. 31
INSTALLATION RESTORATION PROGRAM
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OPERABLE UNIT 3
ELMENDORF AIR FORCE BASE, ALASKA

TO:	Bob Garland Remediation Team Chief AFCEE/ERD-AK PO Box 270 Elmendorf Air Force Base, AK 99506-4420
COPY:	Larry Underbakke, Elmendorf Air Force Base Kim Stricklan, Booz-Allen and Hamilton, Inc. Dan Davis, Radian Corporation Stephen Lovell, Radian Corporation
CONTRACTOR:	RADIAN CORPORATION
CONTRACT NUMBER:	F33615-90-D-4013/009
TITLE:	IRP RI/FS, Operable Unit 3, Elmendorf Air Force Base, AK
DATE OF THIS NOTICE:	5 March 1996
SUBJECT:	Risk Assessment Documentation for SS19

In September 1995, the base requested that a risk evaluation be performed for site SS19 due to the presence of the pesticide Dieldrin. The assessment was performed and results reported to the base within approximately one week. Per your request, attached is the spreadsheet documenting the risk evaluation.

Please feel free to contact me should you have questions or need additional information.

Carcinogen evaluation	Conc. in Surf. Soil (mg/kg)	Conc. in Surf. Soil (mg/kg)	Conc. in Groundwat (mg/l)	Conc. (on PM-10 (mg/m3)	Conc. (vapors) (mg/m3)	Dermal Absorp Fract(a)	Absorp Coeff. (cm/hr)	Absorption Slope (mg/kg-d)-	Ingestion Slope (mg/kg-d)-	Inhalation Slope (mg/kg-d)-	(Soil) Dermal Absorp	(Shower) Dermal Absorp.	Soil Ingestion	Groundwat Ingestion	Ambient Inhalation	Groundwat Inhalation	(Soil) Dermal Absorp	(Shower) Dermal Absorp.	Soil Ingestion	Ambient Air Inhalation	Groundwate Ingestion	Groundwat Inhalation	Total Risk	Percent of Total
Dieldrin	1.4E-01			6.8E-09		0.1		1.6E+01	1.6E+01	1.6E+01	2.1E-07	0.0E+00	1.1E-07	0.0E+00	4.2E-10	0.0E+00	3.4E-06	0.0E+00	1.8E-06	6.7E-09	0.0E+00	0.0E+00	5.1E-06	ERR
TOTAL																	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
										% by pathway							ERR	ERR	ERR	ERR	ERR	ERR		
Noncarcinogen evaluation								RfD (mg/kg-d)	RfD (mg/kg-d)	RfD (mg/kg-d)							HQ by Pathway						Hazard Quotient	
Dieldrin	1.4E-01			6.8E-09		0.10		5.0E-05	5.0E-05		1.8E-06	0.0E+00	9.1E-07	0.0E+00	4.6E-09	0.0E+00	3.6E-02	0.0E+00	1.8E-02	0.0E+00	0.0E+00	0.0E+00	5.4E-02	ERR
TOTAL																	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

Carcinogen evaluation	Soil Ingestion	Soil Dermal Absorptio	Inhalatio	Drinking Water	Soil Ingestion	Soil Dermal Absorptio	Inhalatio	Total Risk	% of Total Risk
Dieldrin	9.4E-10	6.0E-09	1.9E-11	0.0E+00	1.5E-08	9.5E-08	3.0E-10	1.1E-07	ERR
TOTAL				ERR	ERR	ERR	ERR	ERR	ERR
		% by pathway		ERR	ERR	ERR	ERR		
Noncarcinogen evaluation				HQ by pathway				HI	% of Total
Dieldrin	2.6E-09	1.7E-08	5.3E-11	0.0E+00	5.3E-05	3.3E-04	0.0E+00	3.9E-04	ERR
TOTAL				ERR	ERR	ERR	ERR	ERR	ERR

	1E-06	=Conversion Factor (kg/mg)	50
0.2	1	=Adherence factor soil to skin (mg/cm2) (a)	
350	185	=Exposure Frequency (days/yr) (a)	
	365	=Conversion Factor (day/yr)	
	0.5	=Volatilization factor (l/m3) (e pg 21)	
	20	=Total Air Inhalation Rate (m3/d) (b)	
	15	=Indoor Inhalation Rate average (m3/d) (b)	
10	15	=Shower duration (min/day)	

Carcinogenic exposures

1900	5000	=Surface Area Dermal Contact Soil adult (cm2/event) (d)
9	30	=Exposure Duration (yrs)
	70	=Body Weight, adults (kg)
	25550	=Averaging Time Carcinogens 70 yrs. (days) (a)
	100	=Soil ingestion rate (mg-yr/kg-d) (e)
	0	=Ingestion fruit & vegetables adult (kg/day) (b)
1.4	2	=Groundwater Ingestion Rate (l/d) (b)
20000	23000	=Skin surface area (total) (cm2)

Noncarcinogenic exposure to children

	6	=Exposure Duration ages 1-6 (yrs)
1900	3900	=Surface Area Dermal Contact Soil age 1-6 (cm2/event) (d)
	0	=Ingestion Fruit & Vegetables child (kg/mnal)
	2190	=Averaging Time Non-Carcinogens (days) (6yrs)
	15	=Body WeightLages 1-6 (kg) (a)
100	200	=Soil ingestion rate (mg-yr/kg-d) (e)
0.419	0.7	=Groundwater Ingestion Rate (l/d) (c)
8650	10500	=Skin surface area (total) (cm2)

Soil ingestion factor

114 =adult/child weighted average soil intake (mg-yr/kg/day)

50	= Soil ingestion rate (mg/day)
70	= Body weight (kg)
25	= Exposure duration (yrs)
10	= Exposure frequency (days/yr)
20	= Inhalation rate (m3/8 hr.day)
25550	= Carcinogenic averaging time (days)(70 yrs)
9125	= Noncarcinogenic averaging time (days)
1	= Drinking water consumption rate (l/day)
3160	= Surface Area Dermal Contact Soil adult (cm2/event)
1	=Adherence factor soil to skin (mg/cm2)

200	100	= Soil ingestion rate (mg/day)
15	70	= Body weight (kg)
6	30	= Exposure duration (yrs)
12	12	= Exposure frequency (days/
16	20	= Inhalation rate (m3/8 hr.day
NA	25550	= Carcinogenic averaging tim
2190	NA	= Noncarcinogenic averaging
1	1	=Adherence factor soil to skin
3900	5000	=Surface Area Dermal Conta
Child	Adult	

061104

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

NOV 30 1995

MEMORANDUM FOR Alaska Department of Environmental Conservation
Department of Defense Oversight Program
Attention: Mr. Ray Burger
555 Cordova St Second Floor
Anchorage AK 99501-2617

FROM: 3 SPTG/CEVR
22040 Maple St
Elmendorf AFB AK 99506-3240

SUBJECT: Closing of SS19

During our telephone conversation of 4 Oct 95 we agreed that SS19 will be closed based on site specific risk calculations. This risk was based on residential surface soil ingestion at 10 to the negative 5. The SS19 excavation will be back-filled with clean soil and the site graded to original ground level. SS19 will be documented in the Operable Unit 6 Record of Decision. Should you have any questions please feel free to contact me at (907) 552-1829.

LARRY UNDERBAKKE, GS-12
Remedial Project Manager

1st Ind, EPA

MEMORANDUM FOR 3 SPTG/CEVR

Concur/nonconcur.

RAY BURGER
Remedial Project Manager

061105

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

NOV 30 1995

MEMORANDUM FOR Environmental Protection Agency
Alaska Operations Office
Attention: Ms. Marcia Combes
222 W 7th Ave Box 19
Anchorage AK 99513

FROM: 3 SPTG/CEVR
22040 Maple St
Elmendorf AFB AK 99506-3240

SUBJECT: Closing of SS19

During our telephone conversation of 3 Oct 95 we agreed that SS19 will be closed based on site specific risk calculations. This risk was based on residential surface soil ingestion at 10 to the negative 5. The SS19 excavation will be back-filled with clean soil and the site graded to original ground level. SS19 will be documented in the Operable Unit 6 Record of Decision. Should you have any questions, please feel free to contact me at (907) 552-1829.

LARRY UNDERBAKKE, GS-12
Remedial Project Manager

1st Ind, EPA

MEMORANDUM FOR 3 SPTG/CEVR

Concur/nonconcur.

Marcia Combes

MARCIA COMBES
Remedial Project Manager

061106