

US EPA ARCHIVE DOCUMENT

APPENDIX D

PREDa (PREDa.FOR) PROGRAM FILE

PREDA (PREDA.FOR) Program File

0 1 2 3 4 5 6 7
1234567890123456789012345678901234567890123456789012345678901234567

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C      PROGRAM PREDA5X.FORT                                1.
C      PREPARES INPUT DATA FOR DARTAB CODE.                2.
C      SEARCHES DOSE RATE-HEALTH RISK DATA SET FOR AVAILABLE NUCLIDES 3.
C      AND ORGANS, FINDS CORRESPONDING NUCLIDES IN AIRDOS DATA SET.  4.
C      THESE MATCHING NUCLIDES, ORGAN NAMES, AND REST OF DATA NECESSARY 5.
C      FOR DARTAB INPUT ARE WRITTEN AS A TEMPORARY DATA SET ON DISK.  6.
C      MODIFIED FOR SPECIAL CASE INHALATION VALUES OF F1. 11/28/83    7.
C      REVISED AND CORRECTED.                                     12/31/83  8.
C      REVISED AND CORRECTED                                     05/29/84  9.
C                                                                10.
      REAL*8 NUCAIR,NUC,ORGN,CANC,ORGB,TOTBOD,                11.
> NUCOLD,RNLOC,OGLOC,GEN                                     12.
      LOGICAL OUTPUT,GENEFF,EOF,PASS                          13.
      LOGICAL*1 NUCL1(8),NUCL(4),NUCL4,LBL                   14.
      EQUIVALENCE (NUCL1(1),NUC),(NUCL(1),NUCI),(NUCL(4),NUCL4) 15.
      REAL LLET                                               16.
      INTEGER PTLOC,FALOC,HLLOC,RTABLE,FTABLE,DTABLE,FIND    17.
      DIMENSION TITLE(20),DTABLE(7),FTABLE(7),RTABLE(7),TIME(20), 18.
> HLET(20),LLET(20), RELABS(20),ORGN(20),CANC(20), ORGB(20), 19.
> OING(25),OINH(25),ORGDAT(20),IPATH(20),                   20.
> NUCAIR(40),GI(4), GIABS(4,40),ILET(2), RNLOC(10),         21.
> OGLOC(10),PTLOC(10),FALOC(10),HLLOC(10), LTABLE(10),GEN(3), 22.
> GRFAC(2),GLLET(3),GHLET(3), FIND(40,13),RLIST(5),SSIZE(40), 23.
> SRESP(40),SGIABS(4,40), IFIND(13),PSIZN(40),RESPN(40),IRSP(4,4) 24.
      DATA FIND/520*0/,IFIND/2,3,4,5,12,13,14,15,33,96,97,98,99/, RLIST/ 25.
> 1HY,1HW,1HD,1H*,1H /,NUCOLD/8H /,STAR/4H* /              26.
      DATA TOTBOD/8HT BODY /,NUCI/0/,NBL1/Z40/,DLM1/2H '/,DLM2/2H',/ 27.
      DATA LBL/1H /,IRSP/1,2,3,4,2,1,3,4,3,2,1,4,4,3,2,1/,EOF/F/,PASS/T/ 28.
      NAMELIST/INPUT/ILOC,JLOC,PLOC,ILET,DTABLE,RTABLE,FTABLE, 29.
> OUTPUT,GSCFAC,ICRP,IHEAD                                   30.
      NAMELIST/GENTIC/GENEFF,GEN,NGEN,GRFAC,REPPER,GLLET,GHLET 31.
      NAMELIST/ORGAN/ORGN,NORGN,TIME                         32.
      NAMELIST/QFACTR/HLET,LLET                              33.
      NAMELIST/CANCER/CANC,NCANC,RELABS                      34.
      NAMELIST/LOCTBL/NTLOC,RNLOC,OGLOC,PTLOC,FALOC,HLLOC,LTABLE 35.
      NAMELIST/ORGANF/NORGB,ORGB,ORGDAT,IPATH                36.
C                                                                37.
C                                                                38.
C      READ TITLE,SET DEFAULT VALUES                        39.
C                                                                40.
C      READ(5,10800) TITLE                                    41.
      WRITE(6,10810) TITLE                                    42.
      ILOC=0                                                  43.
      JLOC=0                                                  44.
      PLOC=100.                                               45.

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PREDA (PREDA.FOR) Program File
(continued)

0	1	2	3	4	5	6	7	
<u>1234567890123456789012345678901234567890123456789012345678901234567</u>								
	NORGN=0							46.
	NCANC=1							47.
	CANC(1)=TOTBOD							48.
	DO 10 J=1,7							49.
	DTABLE(J)=0							50.
	RTABLE(J)=0							51.
	FTABLE(J)=0							52.
10	CONTINUE							53.
	RTABLE(6)=4							54.
	GSCFAC=0.5							55.
	ILET(1)=1							56.
	ILET(2)=1							57.
	ICRP=1							58.
	IHEAD=1							59.
	DO 20 J=1,20							60.
	TIME(J)=70.							61.
	HLET(J)=20.							62.
	LLET(J)=1.							63.
	RELABS(J)=1.							64.
20	CONTINUE							65.
	NGEN=0							66.
	GENEFF=.FALSE.							67.
C								68.
C	READ NAMELIST VARIABLES							69.
C								70.
22	READ(5,INPUT,END=22)							71.
	READ(5,ORGAN)							72.
	READ(5,QFACTR)							73.
	READ(5,CANCER)							74.
	READ(5,GENTIC)							75.
	READ(5,LOCTBL)							76.
	READ(5,ORGANF)							77.
C								78.
C	READ AND SAVE NUCLIDE NAME FROM AIRDOS DATA SET (UNIT 26)							79.
C								80.
	DO 90 I=1,1000							81.
	READ(26,END=100) NUC,SIZE,RSP,GI,TIM,IND							82.
	IF (I.LE.40) GO TO 30							83.
	IF (I.EQ.41) WRITE(6,10000)							84.
	WRITE(6,10100) NUC,SIZE,RSP,GI,IND							85.
	GO TO 70							86.
30	M=I							87.
	NUCL4=NUCL1(1)							88.
	WRITE(6,10100) NUC,SIZE,RSP,GI,IND							89.
	IF (NUCL.NE.NBL1) GO TO 50							90.
	DO 40 J=1,7							91.

PREDA (PREDA.FOR) Program File
(continued)

0	1	2	3	4	5	6	7
<u>1234567890123456789012345678901234567890123456789012345678901234567</u>							
40	NUCL1(J)=NUCL1(J+1)						92.
	NUCL1(8)=LBL						93.
50	NUCAIR(M)=NUC						94.
	PSIZN(M)=SIZE						95.
	RESPN(M)=RSP						96.
	IF(RESPN(M).EQ.STAR) PSIZN(M)=0.						97.
	DO 60 J=1,4						98.
60	GIABS(J,M)=0.0						99.
	IF(GI(1).GT.1.) GIABS(1,M)=GI(1)						100.
	GIABS(2,M)=GI(2)						101.
70	READ(26) NOL,NOU,NRL,NRU						102.
	DO 80 ILO=NOL,NOU						103.
	DO 80 JLO=NRL,NRU						104.
80	READ(26)						105.
	IF (IND.EQ.1) READ(26)						106.
90	CONTINUE						107.
100	MNUC=M						108.
C							109.
C	READ NUCLIDE NAMES, INFORMATION FROM DOSE RATE-HEALTH RISK						110.
C	DATA SET (UNIT 25). SAVE THOSE WHICH CORRESPOND WITH AIRDOS						111.
C	NUCLIDES.						112.
C							113.
110	READ(25,END=112) NUC,SIZE,RSP,GI,TIM,IND						114.
	GO TO 114						115.
112	EOF=.TRUE.						116.
	GO TO 116						117.
114	IF(NUC.EQ.NUCOLD) GO TO 166						118.
116	IF(PASS) GO TO 160						119.
	DO 150 M=1,MNUC						120.
	IF(NUCOLD.NE.NUCAIR(M)) GO TO 150						121.
C	CHECK INHALATION FACTOR RESPN						122.
	DO 118 L=1,4						123.
	IF(RESPN(M).EQ.RLIST(L)) GO TO 120						124.
118	CONTINUE						125.
	L=L+1						126.
120	LM=L						127.
C	FIND BEST MATCH FOR RESPN AND PSIZN IN RADRISK FILE						128.
	IF(NFINH.EQ.0) GO TO 140						129.
	PSIZE=9E9						130.
	DO 124 L=1,4						131.
	RESP=RLIST(IRSP(L,LM))						132.
	DO 122 K=1,NFINH						133.
	IF(SRESP(K).NE.RESP) GO TO 122						134.
	IF(ABS(SSIZE(K)-PSIZN(M)).LT.ABS(PSIZE-PSIZN(M))) PSIZE=SSIZE(K)						135.
122	CONTINUE						136.
	IF(PSIZE.NE.9E9) GO TO 126						137.

PREDA (PREDA.FOR) Program File
(continued)

0	1	2	3	4	5	6	7	
<u>1234567890123456789012345678901234567890123456789012345678901234567</u>								
	124	CONTINUE						138.
	126	IF(RESF.EQ.RESPN(M).AND.						139.
		& ABS(PSIZE-PSIZN(M)).LE.1E-2*PSIZN(M)) GO TO 128						140.
		WRITE(6,10200) NUCAIR(M),PSIZN(M),PSIZE,RESPN(M),RESP						141.
	128	RESPN(M)=RESP						142.
		PSIZN(M)=PSIZE						143.
C		FIND BEST MATCH FOR GIABS IN RADRISK FILE						144.
	140	IF(NFING.EQ.0) GO TO 150						145.
		GI2=9E9						146.
		DO 142 K=1,NFING						147.
		IF(ABS(SGIABS(2,K)-GIABS(2,M)).GE.ABS(GI2-GIABS(2,M))) GO TO 142						148.
		KM=K						149.
		GI2=SGIABS(2,K)						150.
	142	CONTINUE						151.
		IF(ABS(GI2-GIABS(2,M)).LT.1E-2*GIABS(2,M)) GO TO 144						152.
		WRITE(6,10300) NUCAIR(M),(GIABS(I,M),I=1,4),						153.
		& GIABS(1,M),(SGIABS(I,KM),I=2,4)						154.
	144	DO 146 I=2,4						155.
	146	GIABS(I,M)=SGIABS(I,KM)						156.
	150	CONTINUE						157.
	160	IF(E0F) GO TO 430						158.
C		OBTAIN INGESTION AND INHALATION PARAMETERS FOR NEXT NUCLIDE						159.
		NUCOLD=NUC						160.
		NFING=0						161.
		NFINH=0						162.
		PASS=.TRUE.						163.
		DO 162 M=1,MNUC						164.
		IF(NUC.EQ.NUCAIR(M)) GO TO 164						165.
	162	CONTINUE						166.
		GO TO 166						167.
	164	PASS=.FALSE.						168.
	166	READ(25)						169.
		READ(25)						170.
		IF(IND.LT.10.OR.IND.GE.90) GO TO 168						171.
		READ(25)						172.
		READ(25)						173.
	168	IF(PASS) GO TO 110						174.
		IF((IND.EQ.2.OR.IND.EQ.3).AND.ABS(TIM-70.).GE.0.7) GO TO 110						175.
		IN=MOD(IND-1,10)+1						176.
		IF (IND.GE.90) IN=11-IN						177.
		GO TO (320,330,350,370,380),IN						178.
	320	WRITE(6,10400) NUC,IND						179.
		GO TO 420						180.
C		INGESTION FACTORS						181.
	330	IF(NFING.EQ.0) GO TO 334						182.
		DO 332 I=1,NFING						183.

PREDA (PREDA.FOR) Program File
(continued)

0	1	2	3	4	5	6	7	
<u>1234567890123456789012345678901234567890123456789012345678901234567</u>								
								184.
								185.
								186.
								187.
								188.
								189.
								190.
C								191.
								192.
								193.
								194.
								195.
								196.
								197.
								198.
								199.
C								200.
								201.
C								202.
								203.
								204.
								205.
								206.
								207.
								208.
								209.
								210.
C								211.
								212.
								213.
								214.
								215.
								216.
C								217.
								218.
C								219.
C								220.
C								221.
C								222.
								223.
								224.
C								225.
C								226.
								227.
								228.
								229.

PREDA (PREDA.FOR) Program File
(continued)

0	1	2	3	4	5	6	7
<u>1234567890123456789012345678901234567890123456789012345678901234567</u>							
	>	OUTPUT,GSCFAC,ICRP,IHEAD					230.
C		WRITE ORGAN INFORMATION TO BE READ BY DARTAB AS NAMEDLIST/ORGAN/.					231.
C							232.
		WRITE(30,11000) NORGN,(DLM1,ORGN(N),DLM2,N-1,NORGN)					233.
		WRITE(6,11000) NORGN,(DLM1,ORGN(N),DLM2,N-1,NORGN)					234.
		WRITE(30,11100) (TIME(N),N-1,NORGN)					235.
		WRITE(6,11100) (TIME(N),N-1,NORGN)					236.
		WRITE(30,11200)					237.
		WRITE(6,11200)					238.
C		WRITE DOSE EQUIVALENT FACTOR INFORMATION TO BE READ BY					239.
C		DARTAB AS NAMEDLIST/QFACTR/.					240.
C							241.
		IF (ILET(1).EQ.0) GO TO 460					242.
		WRITE(30,11210) HLET					243.
		WRITE(6,11210) HLET					244.
		WRITE(30,11220) LLET					245.
		WRITE(6,11220) LLET					246.
		WRITE(30,11200)					247.
		WRITE(6,11200)					248.
C		WRITE CANCER INFORMATION TO BE READ BY DARTAB AS NAMEDLIST/CANCER/.					249.
C							250.
460		WRITE(30,11500) NCANC,(DLM1,CANC(N),DLM2,N-1,NCANC)					251.
		WRITE(6,11500) NCANC,(DLM1,CANC(N),DLM2,N-1,NCANC)					252.
		WRITE(30,11600) (RELABS(N),N-1,NCANC)					253.
		WRITE(6,11600) (RELABS(N),N-1,NCANC)					254.
		WRITE(30,11200)					255.
		WRITE(6,11200)					256.
		WRITE(30,11300) GENEFF,NGEN,(DLM1,GEN(I),DLM2,I-1,NGEN)					257.
		WRITE(30,11400) GRFAC,REPPER,GLLET,GHLET					258.
		WRITE(6,11300) GENEFF,NGEN,(DLM1,GEN(I),DLM2,I-1,NGEN)					259.
		WRITE(6,11400) GRFAC,REPPER,GLLET,GHLET					260.
		WRITE(30,11200)					261.
		WRITE(6,11200)					262.
C		WRITE NUCLIDE INFORMATION TO BE READ BY DARTAB AS NAMEDLIST/RNUCLD/					263.
C							264.
		WRITE(30,11700) NONCLD,(DLM1,NUCAIR(N),DLM2,N-1,NONCLD)					265.
		WRITE(6,11700) NONCLD,(DLM1,NUCAIR(N),DLM2,N-1,NONCLD)					266.
		WRITE(30,11800) (PSIZN(N),N-1,NONCLD)					267.
		WRITE(6,11800) (PSIZN(N),N-1,NONCLD)					268.
		WRITE(30,11900) (DLM1,RESPN(N),DLM2,N-1,NONCLD)					269.
		WRITE(6,11900) (DLM1,RESPN(N),DLM2,N-1,NONCLD)					270.
		WRITE(30,12000) ((GIABS(I,N),I-1,4),N-1,NONCLD)					271.
		WRITE(6,12000) ((GIABS(I,N),I-1,4),N-1,NONCLD)					272.
		WRITE(30,11200)					273.
		WRITE(6,11200)					274.
C		WRITE LOCATION TABLE INFORMATION TO BE READ BY DARTAB					275.

PREDA (PREDA.FOR) Program File
(continued)

0	1	2	3	4	5	6	7	
<u>1234567890123456789012345678901234567890123456789012345678901234567</u>								
C	AS NAMELIST/LOCTBL/.							276.
C								277.
	WRITE(30,12100) NTLOC,(DLM1,RNLOC(N),DLM2,N-1,NTLOC)							278.
	WRITE(6,12100) NTLOC,(DLM1,RNLOC(N),DLM2,N-1,NTLOC)							279.
	WRITE(30,12200) (DLM1,OGLOC(N),DLM2,N-1,NTLOC)							280.
	WRITE(6,12200) (DLM1,OGLOC(N),DLM2,N-1,NTLOC)							281.
	WRITE(30,12300) (PTLOC(N),N-1,NTLOC)							282.
	WRITE(6,12300) (PTLOC(N),N-1,NTLOC)							283.
	WRITE(30,12400) (FALOC(N),N-1,NTLOC)							284.
	WRITE(6,12400) (FALOC(N),N-1,NTLOC)							285.
	WRITE(30,12500) (HLLOC(N),N-1,NTLOC)							286.
	WRITE(6,12500) (HLLOC(N),N-1,NTLOC)							287.
	WRITE(30,12600) (LTABLE(N),N-1,NTLOC)							288.
	WRITE(6,12600) (LTABLE(N),N-1,NTLOC)							289.
	WRITE(30,11200)							290.
	WRITE(6,11200)							291.
C	WRITE ORGAN DOSE WEIGHTING FACTOR TO BE READ BY DARTAB							292.
C	AS NAMELIST/ORGANF/.							293.
C								294.
	WRITE(30,12700) NORGB,(DLM1,ORGB(N),DLM2,N-1,NORGB)							295.
	WRITE(6,12700) NORGB,(DLM1,ORGB(N),DLM2,N-1,NORGB)							296.
	WRITE(30,12800) (IPATH(N),N-1,NORGB)							297.
	WRITE(6,12800) (IPATH(N),N-1,NORGB)							298.
	WRITE(30,12900) (ORGDAT(N),N-1,NORGB)							299.
	WRITE(6,12900) (ORGDAT(N),N-1,NORGB)							300.
	WRITE(30,11200)							301.
	WRITE(6,11200)							302.
								303.
C	REWIND AIRDOS (26) AND DOSE-RISK (25) DATA SETS							304.
C	REWIND SPDA INPUT (30) DATA SET							305.
C								306.
	REWIND 25							307.
	REWIND 26							308.
	REWIND 30							309.
								310.
C	STOP							311.
	10000 FORMAT(1H0,'THE FOLLOWING AIRDOS NUCLIDES CANNOT BE PROCESSED:',/)							312.
	10100 FORMAT(1H ,A8,1PE10.2,1X,A1,4(1PE10.2),I3)							313.
	10200 FORMAT('0***FOR NUCLIDE : ',A8/							314.
	> ' THE PARTICLE SIZE HAS BEEN CHANGED FROM ',F9.3,' TO ',F9.3/							315.
	> ' THE RESP CLEARANCE CLASS HAS BEEN CHANGED FROM ',A1, ' TO ',A1)							316.
	10300 FORMAT('***FOR NUCLIDE : ',A8/							317.
	> ' THE GI ABSORPTION FACTORS HAVE BEEN CHANGED FROM',4E12.4/							318.
	> ' TO ',4E12.4)							319.
	10400 FORMAT(1H0,'UNDEFINED PATHWAY. NUC=',A8,2H, , 'IND=',I2)							320.
	10500 FORMAT('**ILLEGAL INDICATOR : ',I4)							321.

PREDA (PREDA.FOR) Program File
(continued)

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<u>1234567890123456789012345678901234567890123456789012345678901234567</u>								
10600	FORMAT(1H0,'M	NUCAIR RESPN	PSIZN					322.
	> 'GIABS(1)-GIABS(4)	INDICATORS:'						323.
	> ' 2 3 4 5 12 13 14 15 33 96 97 98 99' /)							324.
10700	FORMAT(1H ,I2,2X,A8,2X,A1,1X,5(1PE10.2),3X,13I3)							325.
10800	FORMAT(20A4)							326.
10810	FORMAT(1H1,20A4)							327.
10900	FORMAT(1H , '&INPUT ILOC=' ,I2,' , JLOC=' ,I2,' , PLOC=' ,F5.1,1H, /							328.
	> 1H , 'ILET=' ,2(I2,1H,)/							329.
	> 1H , 'DTABLE=' ,7(I2,1H,)/							330.
	> 1H , 'RTABLE=' ,7(I2,1H,)/							331.
	> 1H , 'FTABLE=' ,7(I2,1H,)/							332.
	> 1H , 'OUTPUT=' ,L1,1H, /							333.
	> 1H , 'GSCFAC=' ,F5.3,1H, /							334.
	> 1H , 'ICRP=' ,I1,' , IHEAD=' ,I1/							335.
	> 1H , '&END')							336.
11000	FORMAT(1H , '&ORGAN NORGN=' ,I5,1H, /1H , 'ORGN=' , (T7,5(A2,A8,A2)))							337.
11100	FORMAT(1H , 'TIME=' , (T7,10(F5.1,1H,)))							338.
11200	FORMAT(1H , '&END')							339.
11210	FORMAT(1H , '&QFACTR' /1H , 'HLET=' , (1H , T7,10(F4.1,1H,)))							340.
11220	FORMAT(1H , 'LLET=' , (1H , T7,10(F4.1,1H,)))							341.
11300	FORMAT(1H , '&GENTIC GENEFF=' ,L1,2H, , 'NGEN=' ,I3,1H, / 1H , 'GEN=' , (342.
	> T6,5(A2,A8,A2)))							343.
11400	FORMAT(1H , 'GRFAC=' ,2(1PE10.3,1H,)/1H , 'REPPER=' ,OPF10.6,1H, / 1H ,							344.
	> 'GLLET=' ,3(F8.2,1H,)/1H , 'GHLET=' ,3(F8.2,1H,))							345.
11500	FORMAT(1H , '&CANCER NCANC=' ,I5,1H, /1H , 'CANC=' , (T7,5(A2,A8,A2)))							346.
11600	FORMAT(1H , 'RELABS=' , (T9,10(F4.1,1H,)))							347.
11700	FORMAT(1H , '&RNUCLD NONCLD=' ,I5,1H, / 1H , 'NUCLID=' , (T9,5(A2,A8,A2)							348.
	>))							349.
11800	FORMAT(1H , 'PSIZE=' , (T8,10(F5.2,1H,)))							350.
11900	FORMAT(1H , 'RESP=' , (T8,10(3A2)))							351.
12000	FORMAT(1H , 'GIABS=' , (T8,4(1PE10.3,1H,)))							352.
12100	FORMAT(1H , '&LOCTBL NTLOC=' ,I5,1H, /1H , 'RNLOC=' , (T8,5(A2,A8,A2)))							353.
12200	FORMAT(1H , 'OGLOC=' , (T8,5(A2,A8,A2)))							354.
12300	FORMAT(1H , 'PTLOC=' , (T8,10(I3,1H,)))							355.
12400	FORMAT(1H , 'FALOC=' , (T8,10(I3,1H,)))							356.
12500	FORMAT(1H , 'HLLOC=' , (T8,10(I3,1H,)))							357.
12600	FORMAT(1H , 'LTABLE=' , (T9,10(I3,1H,)))							358.
12700	FORMAT(1H , '&ORGANF NORGB=' ,I5,1H, /1H , 'ORGB=' , (T7,5(A2,A8,A2)))							359.
12800	FORMAT(1H , 'IPATH=' , (T8,10(I3,1H,)))							360.
12900	FORMAT(1H , 'ORGDAT=' , (T9,5(F7.4,1H,)))							361.
	END							362.