

APPENDIX D

PREDA (PREDA.FOR) PROGRAM FILE

PREDA (PREDA.FOR) Program File

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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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<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=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.

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	124	CONTINUE					138.
	126	IF(RESP.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(EOF) 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.

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<u>1234567890123456789012345678901234567890123456789012345678901234567</u>							
	>	OUTPUT, GSCFAC, ICRP, IHEAD					230.
C		WRITE ORGAN INFORMATION TO BE READ BY DARTAB AS NAMELIST/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 NAMELIST/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 NAMELIST/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 NAMELIST/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.

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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.
C      WRITE(30,12700) NORGB,(DLM1,ORGB(N),DLM2,N-1,NORGB) 295.
C      WRITE(6,12700) NORGB,(DLM1,ORGB(N),DLM2,N-1,NORGB) 296.
C      WRITE(30,12800) (IPATH(N),N-1,NORGB)              297.
C      WRITE(6,12800) (IPATH(N),N-1,NORGB)              298.
C      WRITE(30,12900) (ORGDAT(N),N-1,NORGB)            299.
C      WRITE(6,12900) (ORGDAT(N),N-1,NORGB)            300.
C      WRITE(30,11200)                                   301.
C      WRITE(6,11200)                                   302.
C                                                    303.
C      REWIND AIRDOS (26) AND DOSE-RISK (25) DATA SETS  304.
C      REWIND SPDA INPUT (30) DATA SET                  305.
C                                                    306.
C      REWIND 25                                         307.
C      REWIND 26                                         308.
C      REWIND 30                                         309.
C                                                    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.

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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 , '&GENERIC 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.

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