

Aircraft type most relevant	Test Date	Time since last flight (or date) as operating crew	Leucocyte		Superoxide Dismutase Studies			DNA ADDUCTS (genomic DNA from leucocytes)				Volatile Organic Compounds			Pesticides and related substances			Pesticides in Blood Cell Membranes
			Mg	Zn	Functional Test Result % Ref Range Over 40 (mostly 41-47)	Zn/Cu-SOD Result Enzyme units Ref Range 240-410	Mn-SOD Result Enzyme units Ref Range 125-208	Detailed Findings Organic Chemical / Metal Adducts				(Compounds reported above Population Average)			(Compounds reported above Population Average)			
								ADDUCT or chemical group	Quantity ng/ml	Associated GENE (if identified)	RELATED TO (if known)	Zinc ng/ml Ref: 21-74	Blood ng/ml (% of population average - 100%=average) see Appendix B1	Fat mg/kg (% of average - 100%=average (provisional findings)) see Appendix B2	Blood Serum ug/kg (% of maximum value in control group (n=40)) see Appendix B3	Fat mg/kg (% of maximum value in control group (n=57)) see Appendix B4	mg/kg (% of maximum value in control group (n=19))	
B757	24-Apr-06	2005	39	5.7	38	>>	>>	OP Nickel	7 19	21 Several	Zn/Cu-SOD ?	19	Not Tested	Benzene 0.67 (167%) Xylene(s) 0.29 (145%) Trimethylbenzene(s) 0.15 (150%) 1,1,1-Trichloroethane 0.06 (120%) Carbon Tetrachloride 0.15 (150%) N-Pentane 0.7 (175%) 2-Methylpentane 0.55 (183%) N-Hexane 1.75 (109%) N-Heptane 0.94 (470%)	Not Tested	Toxaphene 0.14 (175%) PBBs 0.44 (550%)	Not Tested	Not Tested
B757	01-Apr-06	Feb, 2006	50	5.2	45	>>	>>	Malondialdehyde Nickel	14 Trace	21 ?	Zn/Cu-SOD ?	17	Not Tested	Benzene 1.2 (300%) Toluene 0.55 (367%) 1,1,1-Trichloroethane 0.09 (180%) Dichlorobenzene 0.9 (180%) Cyclopentane 0.16 (160%) 2-Methylpentane 0.45 (150%) N-Hexane 1.9 (119%) N-Heptane 1.7 (850%)	Not Tested	p-Dichlorobenzene 0.70 (135%) o-Dichlorobenzene 0.20 (333%) PBBs 0.47 (588%)	Not Tested	Not Tested
B757	20-Mar-06	2005	Not Tested	Not Tested	37	<40 - No enzyme activity	169	Nickel OP	14 7	21 4 ?	Zn/Cu-SOD ATP - TL ?	17	Not Tested	Benzene 0.9 (225%) Toluene 0.75 (500%) Dichlorobenzene 0.95 (190%) N-Heptane 0.6 (300%)	Not Tested	Lindane 0.14 (280%) PBBs 0.59 (738%) Carbaryl (Sevin) 0.19 (119%)	Not Tested	Not Tested
B757	06-Mar-06	2 days	37	5.2	34	<40 - No enzyme activity	163	Dichlorobenzene PBB Nickel OP	-10 -14 -17 -7	? ? 21	Zn/Cu-SOD cell membrane	16	Benzene 1.4 (175%) Toluene 4.2 (840%) Xylene(s) 1.9 (146%) Dichlorobenzene 2.1 (367%) Cyclopentane 1.1 (220%) 2-Methylpentane 2.9 (132%) 3-Methylpentane 6.7 (118%) N-Heptane 5.4 (600%)	Not Tested	p-Dichlorobenzene 1.7 (283%) o-Dichlorobenzene 0.4 (400%) PBBs 4.5 (900%)	Not Tested	Lindane 0.26 (520%) Dichlorobenzene 0.57 (163%) PBBS [BDE] (Total) 0.29 (363%) Organophosphates (Total) 0.4 (210%) <i>Tricresyl Phosphate is present</i>	
B757	10-Apr-06	1 day	40	5.1	36	?	?	OP Nickel	9 12	4 21	TL Zn/Cu-SOD ?	19	Not Tested	Toluene 0.34 (227%) Carbon Tetrachloride 0.25 (250%) 3-Methylpentane 1.30 (118%) N-Hexane 2.7 (169%) N-Heptane 2.2 (1100%)	Not Tested	Lindane 0.22 (440%) p-Dichlorobenzene 0.59 (113%) o-Dichlorobenzene 0.17 (283%) PBBs 0.37 (463%) OPs 0.25 (TCP) (132%)	Not Tested	Not Tested
B757	05-Apr-06	1 day	Not Tested	Not Tested	35	174	160	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Benzene 1.7 (212%) Toluene 3.2 (640%) Dichlorobenzene 1.7 (283%) Cyclopentane 0.7 (140%) 2-Methylpentane 3.9 (177%) 3-Methylpentane 7.1 (125%) N-Heptane 4.9 (544%)	Not Tested	Not Tested	Not Tested	Not Tested	

B757	12-May-06	2005	42	6.2	35	>>	>>	Tetrachlorvinphos OP Nickel	10 Trace 14	21		19	Not Tested	Tetrachloroethylene 0.17 (133%) N-Hexane 1.75 (109%) N-Heptane 0.3 (150%)	Not Tested	OPs 0.20 (Tetrachlorvinphos) (105%)	Not Tested	
B757																		
B757	05-May-06	4 days	38	4.8	44	>>	>>	Nitrosamines Lindane	Trace 12	Spread & 21	Zn/Cu-SOD	17	Not Tested	Dichlorobenzene 0.64 (128%) Carbon Tetrachloride 0.15 (150%) 3-Methylpentane 1.2 (109%) N-Hexane 1.75 (109%) N-Heptane 0.25 (125%)	Not Tested	o-Dichlorobenzene 0.27 (450%) OPs Trace	Not Tested	
BAE 146																		
BAE 146																		
BAE 146	10-Apr-06	2 hours last flight was 3 months prior to this one	35	6.3	38	>>	>>	Nitrosamines Malondialdehyde	12 10	21	Zn/Cu-SOD	17	Not Tested	Benzene 1.4 (175%) Toluene 0.9 (180%) Dichlorobenzene 0.7 (117%) N-Pentane 1.4 (117%) 2-Methylpentane 2.9 (132%) 3-Methylpentane 5.8 (102%) N-Hexane 12.4 (120%) N-Heptane 4.9 (544%)	Benzene 0.59 (148%) Toluene 0.42 (280%) Dichlorobenzene 0.74 (148%) 2-Methylpentane 0.56 (187%) 3-Methylpentane 1.50 (136%) N-Heptane 1.45 (725%)	PBBs 2.7 (540%)	Lindane 0.17 (340%) p-Dichlorobenzene 0.62 (119%) o-Dichlorobenzene 0.12 (200%) PBBs 0.29 (363%) OPs Trace	Not Tested
BAE 146	25-Apr-06	1999	39	5.7	33	>>	>>	Nitrosamines Dichlorobenzene	12 7	21	Mn-SOD	17	Not Tested	Benzene 0.6 (175%) Toluene 0.25 (167%) Chloroform 0.14 (117%) Tetrachloroethylene 0.17 (113%) Dichlorobenzene(s) 0.74 (148%) N-Pentane 0.74 (175%) 2-Methylpentane 0.32 (107%) 3-Methylpentane 1.44 (131%) N-Heptane 0.75 (375%)	Not Tested	Lindane 0.19 (380%) Mirex 0.06 (120%) p-Dichlorobenzene 0.59 (113%) o-Dichlorobenzene 0.14 (233%) PBBs 0.28 (350%)	Not Tested	
BAE 146	26-Apr-06	2005	46	6.4	35	>>	>>	Malondialdehyde Antimony	17 24	Spread 21	Zn/Cu-SOD	16	Not Tested	Benzene 0.7 (175%) Chloroform 0.15 (125%) 1,1,1-Trichloroethane 0.09 (180%) N-Pentane 0.7 (175%) 2-Methylpentane 0.9 (300%) 3-Methylpentane 1.9 (119%) N-Heptane 1.9 (950%)	Not Tested	?	Lindane 0.29 (590%) Pentachlorophenol 0.27 (169%) PBBS [BDE] (Total) 0.52 (650%) Organophosphates (Total) 0.30 (158%) <i>Tricresyl Phosphate is present Maybe Meyinphos [Phosdrin] present</i>	
BAE 146																		
BAE 146	25-Apr-06	2003	50	4.7	37	>>	>>	PBBs Nickel	21 14	Widespread 21	Zn/Cu-SOD	19	Not Tested	Chloroform 0.15 (125%) 2-Methylpentane 0.35 (117%) N-Heptane 0.3 (150%)	Not Tested	Aldrin 0.02 (154%) Dieldrin 0.07 (140%) DDD 0.07 (175%) PBBs 0.44 (550%)	Not Tested	
BAe146 B737	10-May-06	2005	38	4.8	42	>>	>>	Malondialdehyde Dichlorobenzene	17 10	Spread		19	Not Tested	Toluene 0.17 (133%) Xylene 0.25 (125%) Carbon Tetrachloride 0.14 (140%) 2-Methylpentane 0.40 (133%)	Not Tested	Lindane 0.13 (260%) PBBs 0.24 (300%)	Not Tested	
RJ	08-May-06	1 day	36	5.2	45	>>	>>	Nitrosamines Malondialdehyde	10 22	Spread	Zn/Cu-SOD	19	Not Tested	Benzene 0.52 (130%) Toluene 0.19 (127%)	Not Tested	ALL NORMAL	Not Tested	

TCP Unidentified Organophosphates	Cell Free DNA ug DNA per litre of plasma Ref range up to 9.5	ATP Studies on neutrophils overview	ATP whole Cells			Comments	ADP to ATP conversion efficiency (whole cells)				Comments	ADP-ATP Translocator [TL] (mitochondria, not whole cells):			Niacin Status (Vit B3) Red cell nicotinamide adenine dinucleotide ug/ml Ref. range 14.0 - 30.0	Mitochondrial membrane Tranlocator protein [TL]	
			With excess Mg added nmol/10 ⁶ cells	Endogenous Mg only nmol/10 ⁶ cells	Ratio ATP/ATP ^{Mg} > 0.65		ATP ^{Mg} nmol/10 ⁶ cells	ATP ^{Mg} (inhibitor present) nmol/10 ⁶ cells	ATP ^{Mg} (inhibitor removed) nmol/10 ⁶ cells	ADP to ATP efficiency [(3*-2)/(1*-2)]x100 >60		Start ATP (pmol/106 cells) Ref. range 290 - 700	[TL] 'Out' Ref. range 410 - 950 Change %	[TL] 'In' Ref. range 140 - 330 Change %			
			1.6 - 2.9 (1*)	< 0.3 (2*)	>1.4 (3*)		1.6 - 2.9 (1*)	< 0.3 (2*)	>1.4 (3*)	>60		Ref. range 290 - 700	Ref. range 410 - 950 Change %	Ref. range 140 - 330 Change %			
No	18.4	Abnormal				Very low whole cell ATP. Effect amplified by poor Mg availability.	1.28	0.94	1.01	20.60%	73% block of active site leading to poor ADP→ATP reversion.	205	258 25.9%	112 45.4%	Very poor mitochondrial function secondary to the block at the [TL] site.	Not Tested	Not Tested
No	19.7	Abnormal				Very low whole cell ATP. Effect amplified by poor Mg availability.	1.37	0.89	0.99	20.80%	65% block on active site leading to poor ADP-ATP re-conversion	234	294 25.6%	119 49.1%	Low mitochondrial ATP with poor mitochondrial function secondary to [TL] blockage	Not Tested	Not Tested
OPs Trace	24.2	Abnormal				Low ATP. Effect magnified by poor Mg availability	1.34	0.82	0.92	19.20%	60% block of active site. Very poor ADP→ATP reversion.	188	224 19.1%	141 25%	Very poor mitochondria function. No antibodies on out membrane. There is a chemical block to [TL] site	10.3	Not Tested
Organophosphates Tricresyl Phosphate is present	19.4	Abnormal				Low-normal whole cell ATP. Low ATP-Mg composit	1.79	0.94	1.17	27.10%	55% block on active site leading to poor ADP-ATP re-conversion	262	313 19.4%	45 83%	Very poor provision from mitochondria. Secondary to blocked [TL] site.	Not Tested	Not Tested
Tricresyl Phosphate is present	21.3	Abnormal				Data missing	1.33	0.82	0.98	31.40%	60% block of active site leading to poor ADP→ATP reversion.	279	345 23.7%	117 58.1%	Low mitochondrial ATP, poor provision of 'new' ATP. Probable substrate deficiencies: Nicotinamide, CoQ10 and Ribose	Not Tested	Not Tested
Not Tested	Not Tested	Abnormal				Low whole cell ATP. Effect amplified by poor Mg availability.	1.49	1.12	1.19	18.90%	75% block of active site with poor ADP → ATP reversion.	239	309 29.3%	45 81.7%	Low mitochondrial ATP, poor provision of ATP from mitochondria secondary to [TL] block. Rapid use of available ATP.	Not Tested	LacticAcidosis secondary to disabled mitochondrial function. Organophosphate present on mitochondrial membranes.

Not Tested	17.7	Abnormal	1.39	0.84	0.6	Low whole cell ATP. Effect amplified by poor Mg availability.	1.39	0.67	0.9	31.90%	50% block of active site leading to poor ADP→ATP reversion.	237	286	94	Low mitochondrial ATP. Very poor provision of ATP from mitochondria	Not Tested	Not Tested
Organophosphates	11.4	Abnormal	1.58	1.03	0.65	Low whole cell ATP.	1.58	0.39	1.09	58.80%	25% (mild) block of active site leading to rather poor ADP→ATP reversion.	327	436 33.3%	106 67.6%	Mild reduction in the mitochondrial efficiency in providing ATP to the cytoplasm	Not Tested	Not Tested
No	10.7	Normal	1.98	1.35	0.68	Normal	1.98	0.2	1.46	70.80%	Normal	435	621 42.8%	179 58.9%	Normal	Not Tested	Not Tested
No	16.2	Abnormal	1.47	0.87	0.59	Low whole cell ATP. Effect amplified by poor Mg availability.	1.47	1.03	1.18	34.10%	70% block of active site leading to poor ADP→ATP reversion.	288	367 27.4%	175 39.2%	Poor mitochondrial function	Not Tested	Not Tested
Organophosphates	17.7	Abnormal	1.33	0.82	0.62	Low whole-cell ATP. Effects amplified by poor Mg availability	1.33	0.82	0.97	29.40%	60% block of the active site leading to very poor ADP → ATP reversion.	227	280 23.3%	121 46.6%	Low mitochondrial ATP with very poor provision of 'new' ATP from mitochondria.	Not Tested	Data available
No	12.6	Abnormal	1.44	0.86	0.59	Low whole cell ATP with rather poor Mg availability.	1.44	0.9	1.11	38.90%	63% block of the active site leading to very poor ADP → ATP reversion.	280	373 29.6%	146 47.9%	Poor mitochondrial function	Not Tested	Not Tested
Organophosphates	16.4	Abnormal	1.56	0.89	0.57	Low whole cell ATP. Effect amplified by poor ATP related Mg availability.	1.56	1.31	1.36	20%	84% block of active site leading to very poor ADP→ATP reversion.	253	306 20.9%	192 24.1%	Low mitochondrial ATP, poor provision of 'new' ATP and very poor use of available ATP secondary to block at the [TL] block site.	Not Tested	Not Tested
Organophosphates	17.7	Abnormal	1.33	0.78	0.58	Low whole-cell ATP. Effects amplified by poor ATP-related Mg availability	1.33	1.02	1.1	25.80%	75% block of the active site leading to very poor ADP → ATP reversion.	232	278 19.8%	135 41.8%	Very poor mitochondrial function. Secondary to block at [TL] site.	Not Tested	Not Tested