PLAINTIFF'S
EXHIBIT
DUP-2463

EN-1826

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE 19898

ENGINEERING DEPARTMENT

October 10, 1977

SAFETY PERSONNEL

HAZARDOUS MATERIAL SAMPLING

In the past, several of you have requested a recap of the sampling results from the various Field sites. In an effort to reduce the volume, I am only including the results received by the Safety Office in the last two years.

Asbestos - 1977 Only

JOB	RESULTS	REMARKS
Removing asbestos insul.	0.09 fib/ml	Outside
Sweeping and bagging asbestos insul.	2.19 " "	Inside building - Copus blower in use
Applying coated asbestos cloth	0.01 " "	Inside insul. shop wall exhaust fan
Fabricate Danco insul.	0	Inside shop - doors open
Remove asbestos insul.	0.89 " "	Inside factory building - no ventilation
Fabricate asbes. insul.	0.01 " "	Inside shop - doors open
Sweeping and bagging insul.	0.50 " "	Inside building - no ventilation
Dismantling asbestos insul.	5 samples 0.09 fib/ml to 0.33 " "	Inside building - no ventilation
Fabricate asbestos insul.	0.003 " "	Insulation shop - doors open
Install asbestos cloth	0.15 " "	Inside shop - shop exhaust system

Cont'd.

DUP 0914750

DU 030680

Welding Study - Shop Area 1977

Arc	Rod	Base Metal	mg/m³ Ni	mg/m³ Cr	mg/m³ FeO	ppm O_3	ppm CO	ppm CO_2	mg/m³ Zn	Total Respirable Dust mg/m³	Remarks
Heliarc	ST 308	ST-304L	0	0	-	0.2	-	500	-	6.8	No local ventilation
Metal Arc	7018	A-36	-	-	4.2	0	10	-	-	30.7	" " "
Metal Arc	7018	A-36	-	-	5.3	0	-	8,000	-	30.3	" " "
Heliarc	ST 308L	ST 304L	0	0	0.2	0	-	6,500	-	< .1	" " "
Heliarc	Oxweld #1	A106	0	0	0.02	0.05	0	400	0	4.3	Local exhaust
Radiograph	None	ST-304L	0.71	0.28	-	0	-	250	-	7.1	Inadequate ventilation
Spray Arc (Heliarc)	Cu Coated Wire	A-36	-	-	1.4	0.3	0	12,000	-	1.55	No local ventilation
Heliarc	6010	Gal. steel	-	-	2.95	0	9	4,250	5.6	13.8	" " "
Heliarc	ST 309	A-139 ST 304	.04	0	.13	.1	-	10,000	-	0.4	" " "
Automatic MIG	Cu Coated	Gal. steel	0	0	.37	.1	10	500	0	5.9	" " "
Metal Arc	7018	A-36	-	-	0	0	-	1,000	.029	9.09	Local exhaust not used
Metal Arc	6010	Gal. steel	-	-	0	-	-	-	1.57	3.8	" " used
Metal Arc	6010 7018	A-36 Gal. steel	0	0	0	-	-	-	.003	2.2	" " not used
Heliarc	4043AL	6061 AL	-	-	-	0	-	500	-	<.1	" " used
Metal Arc	6010	A-36	-	-	-	0	-	10,000	-	3.8	" " "
Heliarc	ST 300	Gal. steel	-	-	-	0	-	500	-	< .1	" " "

DUS 0914751

DU 030681

Welding Study - Shop Area - 1977 - Cont'd.

Arc	Rod	Base Metal	mg/m³ Ni	mg/m³ Cr	mg/m³ FeO	ppm O_3	ppm CO	ppm CO_2	mg/m³ Zn	Total Respirable Dust mg/m³	Remarks
Acetylene Cutting	NA	1020	-	-	0.1	0	20	5,000	-	4.4	Local exhaust used
Metal Arc	7018	A-36	-	-	-	0	0	-	-	1.18	" " "
Metal Arc	7016	A-106	-	-	-	-	0	-	-	<.1	" " "
Metal Arc	7016	1040	-	-	-	-	-	-	-	<.1	" " "
Heliarc	Steel	Steel	-	-	-	0	-	15,000	-	-	" " "
Plasma Arc Burning	None	304L	-	-	-	.05	90	2,000	-	4.72	" " "
Heliarc	308 ST	308 ST	-	-	.08	.04	-	5,000	-	<.1	" " not used.

Welding and Cutting Fume Study - 1975

Arc	Base Metal	NO_x*	ppm CO	ppm O_3	Remarks
Plasma Arc	Stainless Steel	16	9	.05	Local exhaust used
" "	" "	5	9	.05	" " "
" "	" "	21	9	.05	" " not used
" "	" "	17	-	.05	" " " "
" "	" "	87	14	0	" " " "
" "	Aluminum	31	9	.05	Local exhaust used
" "	"	39	9	0	" " not used
" "	Carbon Steel	13	-	.05	" " used

*NO and NO_2

DUP 0914752

DU 030682

Welding and Cutting Fume Study - 1975 - Cont'd.

Arc	Base Metal	NO_x*	ppm CO	ppm O_3	Remarks
Plasma Arc	Carbon Steel	30	12	.03	Local exhaust used
Metal Arc	" "	0.4	5	.005	" " "
" "	" "	7	2	.005	" " not used
" "	Stainless Steel	3	3	.02	" " " "
" "	Galv. Steel	4	3	.01	" " " "
TIG Welder	Stainle s Steel	1	2	.02	Local exhaust used
" "	" "	7	-	.01	" " not used

*NO and NO_2

Abrasive Grinding Dust Study - 1975

Grinder Type	Wheel	Exhaust System		Filter		Sample Results mg/m^3	Material Being Ground Wet - Dry
		Yes	No	Yes	No		
Pedestal	10" Al. Oxide		X		X	< 1	Carbon steel - Dry
"	" " "		X		X	< 1	" " "
"	" " "		X		X	< 1	Stainless Steel - Dry
"	" " "		X		X	< 1	Breathing zone air Samples on carbon steel - dry
Portable Disc	Disc - resin cloth		X		X	< 1	Steel - aluminum - dry
" "	" " "		X		X	< 1	Steel - dry - breathing zone
" "	" " "		X		X	< 1	Alum. - dry - breathing zone
" "	" " "		X		X	< 1	Aluminum - dry

DUP 0914753

DU 030683

Abrasive Grinding Dust Study - 1975 - Cont'd.

Grinder Type	Wheel	Exhaust System		Filter		Sample Results mg/m³	Material Being Ground Wet - Dry
		Yes	No	Yes	No		
Pedestal Grinder	6" Al. Oxide		X		X	<1	Carbon steel - Dry
" "	" " "		X		X	<1	" " "
" "	" " "		X		X	<1	Tungsten steel - dry breathing zone
" "	" " "		X		X	<1	Tungsten steel - dry breathing zone
Portable Disc	Aluminum Oxide resin disc		X		X	<1	Stainless steel - dry breathing zone
" "	" " "		X		X	<1	Stainless steel 3" from grinder
" "	" " "		X		X	1.3	Stainless steel 1.5" from grinder
" "	" " "		X		X	2.6	Stainless steel - 11" from grinder downward
Bench grinder	A Corundum		X		X	<1	Stainless steel - dry
" "	" "		X		X	<1	Iron - dry
" "	" "		X		X	<1	Stainless steel - dry
" "	" "		X		X	<1	Tool steel - dry
" "	" "		X		X	<1	Carbon steel - dry
" "	" "		X		X	<1	Stainless steel - dry breathing zone
" "	Alum. Oxide		X		X	<1	Stainless steel - dry
" "	" "		X		X	<1	Iron - dry
" "	" "		X		X	<1	Stainless steel - dry
" "	" "		X		X	<1	Tool steel - dry

DUP 0914754

DU 030684

Abrasive Grinder Dust Study - 1975 - Cont'd.

Grinder Type	Wheel	Exhust System				Sample Results mg/m^3	Material Being Ground Wet - Dry
		Yes	No	Filter Yes	Filter No		
Bench grinder	Alum. Oxide		X		X	< 1	Stainless steel - dry breathing zone
Pedestal	Alum. Oxide		X		X	< 1	Stainless steel - dry
"	" "		X		X	< 1	" " "
"	" "		X		X	< 1	C.S. pipe - dry
"	" "		X		X	< 1	C.S. pipe - dry breathing zone
"	" "		X		X	< 1	Titanium stainless steel - dry breathing zone
"	" "		X		X	< 1	" " " "
"	" "		X		X	< 1	" " " "
"	" "		X		X	< 1	" " " "

Dowtherm "A" Study - Test Area

Sample	Location	Concentration mg/m^3	Remarks
#1	4 meters away from test area	8.84	Open bucket of dow in room - wall exhaust fan only
#2	At test area	9.52	" " " " "
#3	5 meters away from test area	9.49	" " " " "
#4	At dow boiler operating station	12.40	" " " " "
#5	Adjacent to test area	7.92	" " " " "

DUP 0614755

DU 030685

Grinding operation using oil mist

Oil mist concentration study 1976

Sample Number	Location	Concentration mg/m^3	Remarks
1	In breathing zone at machine	4.0	

Tungsten Carbide bit grinding 1976

Dust Study

Sample	Location	Concentration mg/m^3 Tungsten	Cobolt	Aluminum	Remarks
#1	Breathing zone of operator at grinder	0.1	.009	-	Normal bit grinding operation
#2	" " "	< 0.1	< .005	-	" " "
#3	" " "	0.5	0.070	-	Heavy grinding
#4	" " "	-	-	0.01	Normal bit grinding operation
#5	" " "	-	-	0.04	" " "

1.1.1 Trichloroethane Sampling
Degreasing Tank

Sample	Location	Concentration ppm	Remarks
#1	20" above tank	150	Shop fabricated tank
#2	" " "	250	w/O seal or
#3	Inside top edge of tank	700	exhaust system.

DUP 0914756

DU 030686