U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 75-109, 110, 112, 114-274

FAIRBANKS WEIGHING DIVISION
COLT INDUSTRIES
ST. JOHNSBURY, VERMONT

APRIL 1976

I. TOXICITY DETERMINATION

Based upon environmental samples collected during an initial survey (July 28-31, 1975) and a follow-up survey (December 1-5, 1975), ventilation measurements of existing exhaust systems, observation of work practices, and information obtained by administering confidential medical questionnaires; the following determinations have been made:

RHE 75-109 With the exception of the welder in the "white room" (partially enclosed welding booth), all welders are exposed to concentrations of welding fumes and gases that are either hazardous or potentially hazardous to their health. Since the amount of actual welding is highly variable, the degree of the health hazard increases as the amount of actual welding time increases.

SPECIAL RECOMMENDATION - In order to ameliorate the existing condition, it is recommended that the present exhaust system (described in the body of this report) be modified such that welding fumes and gases are removed at the source and in such a manner that they are drawn away from the welders and not past their breathing zones. In order for such a local exhaust system to effectively remove fumes and gases at the source, it will be necessary that the present air imbalance (described in the body of this report) be corrected by increasing the amount of make-up air.

RHE 75-110 The two employees in the plating room were not exposed to toxic concentrations of cyanide, hydrochloric acid, nitric acid, nickel, hexavalent chromium, and sodium hydroxide during these sampling periods.

RHE 75-112 Lead used by "heat treaters" to harden pivots does not present a health hazard as used during both visits. This determination also is supported by normal lead levels found in urine samples.

RHE 75-114 Nuisance dust generated by grinders, belt sanders, and abrasive cut-off saw operators does not present a health hazard at the concentrations measured during this evaluation.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this Determination Report are available upon request from the Hazard Evaluation Services Branch, NIOSH, Robert A. Taft Laboratories, 4676 Columbia Parkway, Cincinnati, Ohio 45226. Copies have been sent to:

a) Fairbanks Weighing Division, Colt Industries, St. Johnsbury, Vermont
b) Authorized Representative of Employees
c) U.S. Department of Labor - Region I
d) NIOSH - Region I

For the purposes of informing the approximate 26 "affected" employees, the employer shall promptly "post" the Determination Report for a period of 30 calendar days in a prominent place(s) near where exposed employees work.

III. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health (NIOSH) received seven requests from an employer representative regarding employee exposure to potentially toxic substances while conducting assigned operations in respective work areas.

A Determination Report for three of these requests (RHE 75-108, 111, and 113) already has been distributed. The remaining four requests are covered in this Determination Report and are in regard to employees' respective exposure to 1) welding fumes in the production welding area (RHE 75-109), 2) various chemicals (e.g. cyanides, acids, and alkalines) used in the plating room (RHE 75-110), 3) lead fume generated in the heat-treating area (RHE 75-112), and 4) dust generated in the grinding, belt sanding, and abrasive cut-off areas (RHE 75-114).

IV. HEALTH HAZARD EVALUATION

A. Plant Process - Conditions of Use

The Fairbanks Weighing Division, Colt Industries, St. Johnsbury, Vermont plant is engaged in the manufacturing of more than one hundred different models of weighing scales. This is accomplished by conducting specific operations at designated locations in one large building (690' x 280' with relatively high ceilings). The operations along with the respective substance(s) of concern are described below.

RHE 75-109 Production Welding Area

There is an average of six welders per shift (two shifts) in the area identified as the "production welding area." Welding in this area is comprised largely of gas shielded arc welding but includes electric arc and oxyacetylene. Most of the welding is on stainless steel but includes aluminum and mild steel. Filler materials included both wire and rods. Shielding was done by using a gas composed of 75% argon and 25% helium.

At least four (and possibly five) of the welders (per shift) do a more continuous type of welding. One of the welders is located in a booth identified as the "white room." Welding is conducted at this location with a local exhaust system. In addition to the local exhaust system, the welder has taken the liberty of orienting a portable air circulating fan in such a manner that fumes are immediately directed toward the small local exhaust hood on the opposite side.

Adjacent to this booth are another four welding stations. These stations consist of a metal working surface (table) located within an area sectioned off with screens.

An "exhaust system" was available in each of these welding areas. The system was originally designed to include a main duct with branch ducts to each welding station. The major portion of each branch duct was comprised of flexible duct work and equipped with a small hood (15" x 15" opening) to remove fumes at the source.

Prior to the first visit, essentially all of the branch ducts had been removed (all except about one foot) and the hood had been attached to the remaining piece of duct; this placed the hood up against the main duct. Welders often stood between the exhaust hood and their work, thus fumes generated are drawn past their breathing zones.

Changes made between the first and second visit included the addition of one branch duct with a 10" x 2" slot and the removal of the 15" x 15" hoods which were previously up against the main ducts.

The newly added duct (local exhaust system) was not used and the other branch duct openings (to the main duct) were blocked off with blast gates. On the opposite side of the aisle, there was an additional employee who did some infrequent welding, depending on the work load.

RHE 75-110 There are two employees in the plating room; plating is conducted on day shift only and consists of a stainless steel cleaning line, a copper and nickel plating line, a zinc phosphatizing line, and a proprietary process called Endureon process.

Two exhaust systems provide adequate ventilation through slotted hoods positioned along the back edge of several of the tanks. Those tanks that are exhausted in such a manner are along two walls. Also, a nickel plating tank located near the center of the room is locally exhausted in the same manner.

Personal protective equipment is also available in case of accidental splashes.

RHE 75-112 There is one heat treater per shift (two shifts) who dips pivots in a pot of molten lead. These small knife edge pivots, used in weighing balances, are dipped in the molten lead to harden them. The pot of molten lead is located in a locally exhausted hood. The lead from the molten pot also is used to bring counter weights up to the correct weight.

This operation is not continuous but ranges from two-four hours in a typical shift.

RHE 75-114 Grinding, sanding, and abrasive cut-off were each conducted in separate areas. The substance of concern (nuisance particulate) was generated by using dual-wheeled pedestal type grinders, belt sanders and abrasive cut-off saws.

All machines were provided with a local exhaust system. The grinders and belt sanders were partially enclosed and captured particulate was collected in a portable industrial type bag-house. The cut-off saws (2) were almost totally enclosed, and each is equipped with a separate fan that exhausts outdoors.

B. Evaluation Progress

An initial survey was conducted on July 28-31, 1975. During this initial survey, all seven requests (RHE 75-108 through 75-114) were serviced. A Determination Report was prepared for three of these requests (RHE 75-108, 111, 113) after this initial survey. A follow-up survey, in regard to the remaining four requests (RHE 75-109,110,112, and 114) was conducted December 2-4, 1975.

C. Evaluation Methods

1. Sampling and Analytical Methods

RHE 75-109 Welders' exposure to welding fumes was evaluated by collecting breathing zone samples on PVC filters at 2 liters per minute. This sampling procedure was conducted during both the initial and follow-up survey. Also during the follow-up survey samples were collected inside of the welders' helmet as well as outside the helmet (whenever feasible).

Samples were weighed before and after to determine total welding fume. In addition to this, specific analyses were done by atomic absorption spectroscopy for iron oxide, manganese, chromium, nickel, and copper.

RHE 75-110 All samples collected in the plating room were area samples. Impinger samples (cyanide, hydrochloric acid, and nitric acid samples) were collected at a flow rate of 1 liter per minute. Filter samples (nickel, hexavalent chromium, and sodium hydroxide samples) were collected at 2 liters per minute.

Analysis of these samples were by the following methods: cyanide samples were by specific ion electrode; hydrochloric acid samples were by potentiometric technique; nitric acid samples were by colorimetric technique; nickel and sodium samples were by atomic absorption; and chromium samples were by colorimetric determination.

RHE 75-112 Heat treater's exposure to lead fume was determined by collecting breathing zone samples on cellulose membrane filters at 2 liters per minute. Urine samples were also collected during both surveys. These samples were analyzed by atomic absorption.

RHE 75-114 Grinders, belt sanders, and abrasive cut-off saw operators' exposure to nuisance particulate was determined by collecting breathing zone samples on PVC filters. During the initial survey, all (except in one case) breathing zone samples were for total dust. During the follow-up, samples were collected for both total dust and respirable fraction. Total dust samples were collected at 2 liters per minute; samples for the respirable fraction were collected at 1.7 liters per minute, while utilizing a cyclone. In addition to collecting samples, ventilation measurements were made during both surveys.

2. Medical Evaluation

As part of the evaluation, confidential medical questionnaires also were administered to all employees taking part in the environmental sampling.

D. Evaluation Criteria

a. Environmental Criteria

The three primary sources of environmental criteria considered in this report are (1) NIOSH criteria documents recommending occupational health standards (2) American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) and (3) Federal Occupational Health Standards promulgated by the U.S. Department of Labor (29 CFR part 1910.1000). Since the determinations made as a result of this evaluation would not be changed by listing all applicable recommended standards, TLVs, or Federal standard, only those considered most applicable are listed below with its source.

		Time Weighted Average (TWA) in Micrograms per Cubic Meter
	Welding Fume[a]	5000
C*	Manganese[a]	5000
	Chromium Metal[b]	1000
	Nickel Metal[a]	1000
	Copper[a]	200
	Cyanide[a] - Skin	5000
C	Sodium Hydroxide[e]	2000*
	Nickel, Soluble Salt (as Ni)[a]	1000
	Chromium (VI)[d]	1
	Hydrogen Chloride[a]	7000
	Nitric Acid[a]	5000
	Lead[c]	150

	TWA in Milligrams per Cubic Meter
Nuisance Particulate[a]	10
Nuisance Particulate[a] (respirable fraction)	5

A urine lead level greater than 150 micrograms per liter of urine is considered unacceptable and poses a risk of lead poisoning.

a) ACGIH Threshold Limit Values for Chemical Substances in Workroom Air Adapted by ACGIH for 1975 and Supporting Documentation
b) Federal Occupational Health Standards, 29 CFR 1910.1000
c) NIOSH Criteria for a Recommended Standard...Occupational Exposure to Inorganic Lead, 1972
d) NIOSH Criteria for a Recommended Standard...Occupational Exposure to Chromium (VI), 1976
e) NIOSH Criteria for a Recommended Standard...Occupational Exposure to Sodium Hydroxide, 1975

* For any 15 minute period
*C Means ceiling value

b. Physiological Effects

The following is a summary of the adverse effects resulting from excessive exposure to each of the substances of concern:

Welding Fumes - Inhalation of excessive amounts of welding fumes may result in metal fume fever. However, this is highly dependent upon the various metal fumes. Iron, tin oxide, and aluminum are considered relatively inert; copper, manganese and zinc are capable of producing metal fume fever; others may be more toxic. Some of the symptoms of metal fume fever include chills and fever, which rarely exceeds 102°F, upset stomach and vomiting, dryness of the throat, cough, weakness, and aching of the head and body. Such symptoms often occur some hours later and usually last only a day.

Cyanide - Of all industrial chemicals, cyanides are among the most toxic; yet, very few serious accidents are attributed to cyanides. Poisoning may occur by absorption through the skin, by ingestion, and by inhalation. Exposure to low concentrations may result in early symptoms of weakness, headache, confusion, occasional nausea and vomiting. Generally there is no change in pulse rate and the respiration rate is increased in the beginning and becomes slow in later stages.

Nickel (Salts) - No major health problems are normally connected with nickel plating; "nickel itch," a rash caused by contact with the nickel plating solution is about the most common problem.

Hydrochloric Acid (HCl) - Because of its irritant nature, HCl is seldom inhaled in concentrations high enough to cause serious intoxication.

Nitric Acid - Nitric acid is a strong irritant. Continued exposure to the vapor and/or mist, is suspected of causing chronic bronchitis and possible chemical pneumonitis.

Lead - Inhalation of lead fumes may result in lead poisoning. Signs and symptoms may include abdominal pain with tenderness, constipation, headache, weakness, muscular aches and cramps, loss of appetite, nausea, vomiting, weight loss, anemia with pallor and lead lines.

Nuisance Dust - Inhalation of excessive amounts cause no adverse effects in the lung; elevated concentrations reduce visibility and may result in unpleasant deposits in the eyes and nose, plus injury to the mucous membranes through mechanical action.

E. Evaluation Results and Discussion

RHE 75-109 Welding fume concentrations were found to be in excess of the threshold limit value in several instances (see Table I). It should be noted that these elevated concentrations were generally measured outside of the welding helmet (lapel sample). However, the positive toxicity determination was made because of a number of other factors.

Information obtained through medical questionnaires indicates that welders, in general, were experiencing adverse medical symptomatology which is compatible with excessive exposure to welding fumes. Some of the more prevalent symptoms included shortness of breath, cough, upper respiratory irritation, and "cold-like" symptoms.

Face velocities of the exhaust hoods in the welding were favorable. However, this exhaust system is considered totally inadequate for the following reasons: (1) the hoods are too far from the source; (2) welding fumes are often drawn past the welder's breathing zone since he generally stands between his work and the exhaust hoods; and (3) the lack of air movement is evident from the number of portable air circulating fans; this is true throughout the building. This lack of air movement is more evident to the welders when they use inert gases on a weld that may require a considerable amount of time. Inert gases and fumes are not removed from their breathing zones rapidly enough and therefore they temporarily experience a shortness of breath.

RHE 75-110 All contaminants sampled for in the plating room were well within acceptable levels. The highest concentrations measured were as follows: Nickel was 6.6 ug/M^3; Cyanide was not detected; Nitric Acid was 60.5 ug/M^3; Hexavalent chromium was 0.04 ug/M^3; Hydrochloric acid was 700 ug/M^3; and Sodium hydroxide was 5.1 ug/M^3. The first tank in the stainless steel cleaning line (installed between the first and second visit) was reported to give off vapors that caused upper respiratory tract irritation and headaches when the tank was heated. However, the platers had been avoiding this by not heating the tank. Should it become necessary to heat the tank, it is suggested that the tank be locally exhausted. This would require very little work since the present exhaust system already provides for a branch duct at this tank location.

RHE 75-112 Lead was not detected in the heat treaters' breathing zone samples. Urine samples were collected from both heat treaters; however, only one of the heat treaters urine samples were analyzed because the other's sample was lost in transit. Urine lead levels (for the one heat treater) were well within normal limits. In addition to these negative results, the hardening of pivots is conducted in a ventilated hood. For these reasons a negative toxicity determination was made.

RHE 75-114 With the exception of samples collected in one belt sander's breathing zone (on two separate days - July 30 and December 3); all samples for nuisance particulate were well within acceptable limits (see Table II). It should be noted that the respirable fraction was quite low in all cases, including that for the belt sander who had the high total dust concentration. One possible explanation for this discrepancy is that on the afternoon of July 30, 1975 the local exhaust system had not been turned on; this may also have been the situation on December 3, 1975.

All equipment (grinders, belt sanders, and abrasive cut-off saws) are locally exhausted and partially enclosed. The exhaust for one of the pedestal grinders was found to be plugged during the initial survey. The capture velocity (for pedestal grinders) ranged from 250-600 FPM, 300-400 FPM for belt sanders, and 600 FPM at the duct face for cut-off saws. The cut-off saws were well enclosed, the belt sanders could have been enclosed better, and pedestal grinders were adequately enclosed.

Since the nuisance dust concentrations were, in most cases, low and no adverse medical symptomatalogy was reported a negative toxicity determination was made.

V. RECOMMENDATIONS

1. In addition to providing an adequate local exhaust system in the welding area, it is recommended that the air imbalance (evident throughout the plant) be corrected by providing an adequate make-up air system.

2. The welding stations should be better separated by increasing the number of screens. Also, there is some question as to the acceptability of the plastic screen between the welding stations and the aisles.

3. The exhaust system in the plating room should not be completely turned off at night. This would reduce the possibility of forming toxic gases plus keep concentrations of gases normally there at a low level.

VI. BIBLIOGRAPHY

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3. Michigan's Occupational Health Hazards in the Plating Industry; Vol. 11, No. 2, Winter 1965-66.

4. American Welding Society; The Welding Environment, 1973.

5. Patty, F.; Industrial Hygiene and Toxicology, Vol. II, 1967.

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7. NIOSH Criteria for a Recommended Standard...Occupational Exposure to Sodium Hydroxide, 1975.

8. NIOSH Criteria for a Recommended Standard...Occupational Exposure to Chromium (VI), 1975.

9. NIOSH Criteria for a Recommended Standard...Occupational Exposure to Inorganic Lead.

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TABLE I

WELDING FUME CONCENTRATIONS IN WELDERS' BREATHING ZONE

FAIRBANKS WEIGHING DIVISION
ST. JOHNSBURY, VERMONT

Job Classification	Time	Time-weighted Average Concentration in ug*M^3 Welding Fume	Iron Oxide	Manganese	Chromium	Nickel	Copper	Comments
			July 29, 1975					
Welder (A)	0800-1200 1304-1555	1594	714	84	55	34	10	80% MIG welding 20% with consumable rods
Welder (B)	1801-1200 1308-1550	2668	728	145	N.D.	2	4	Same
Welder (C)	0803-1200 1305-1500	3097	1439	55	7	5	16	Same
Welder (D)	0805-1200 1300-1550	1272	519	72	60	26	7	Same
			July 30, 1975					
Welder (A)	0704-1150 1304-1555	1729	466	71	68	38	10	
Welder (B)	0710-1101	1147	303	30	30	26	4	Represents entire exposure on this day, employee went home
Welder (C)	0704-1151 1305-1554	2039	902	121	110	77	11	80% MIG welding 20% with consumable rods
Welder (D)	0710-1151 1307-1555	6067	2815	130	27	27	24	Same

TABLE I (contd)
WELDING FUME CONCENTRATIONS IN WELDERS' BREATHING ZONE
FAIRBANKS WEIGHING DIVISION
ST. JOHNSBURY, VERMONT

Job Classification	Time	Time-weighted Average Concentration in ug*M^3 Welding Fume	Iron Oxide	Manganese	Chromium	Nickel	Copper	Comments
			December 2, 1975					
Welder (C)	0718-1155 1304-1540	1674	580	150	166	59	8	Inside of the helmet
Welder (C)	0718-1155 1304-1540	3259	1306	259	335	142	11	Outside of the helmet
Welder (A)	0721-1153 1306-1540	906	439	101	110	33	6	Inside of the helmet
Welder (A)	0721-1153 1306-1540	2153	812	101	131	47	6	Outside of the helmet
Welder (B)	0730-1153 1307-1530	4740	650	145	145	59	6	Outside of the helmet
Welder (E)	0730-1151	909	500	33	8	6	10	Note: 1/2 shift sample Inside of the helmet
Welder (E)	0738-1151 1302-1540	2754	1557	145	11	5	18	Outside of the helmet
Welder (F)	0740-1155 1308-1540	1056	585	47	7	11	9	Outside of the helmet
			December 3, 1975					
Welder (A)	0705-1130 1300-1540	1011	374	68	55	17	3	Inside of the helmet
Welder (A)	0705-1130 1300-1540	1388	600	83	62	23	4	Outside of the helmet
Welder (B)	0714-1130 1258-1540	12476	3074	229	17	12	19	Outside of the helmet

TABLE I (contd)

WELDING FUME CONCENTRATIONS IN WELDERS' BREATHING ZONE
FAIRBANKS WEIGHING DIVISION
ST. JOHNSBURY, VERMONT

Job Classification	Time	Time-weighted Average Concentration in ug*M^3 Welding Fume	Iron Oxide	Manganese	Chromium	Nickel	Copper	Comments
Welder (E)	0716-1135 1258-1540	21662	1639	128	8	5	35	Outside of the helmet
Welder (C)	0707-1140 1255-1540	1732	656	154	128	51	6	Inside of the helmet
Welder (C)	0707-1140 1255-1540	3710	839	147	121	50	7	Outside of the helmet
Welder (D)	0718-1135 1300-1540	7914	917	278	309	76	10	Outside of the helmet
		December 4, 1975						
Welder (G)	1607-1910	6421	3852	301	19	11	150	Outside of the helmet
Welder (G)	1607-1910	1858	924	68	11	8	31	Inside of the helmet
Welder (H)	1611-2330	7460	2540	310	471	136	20	Outside of the helmet
Welder (H)	1611-2330	5628	1591	253	394	92	16	Inside of the helmet
Welder (I)	1615-2330	10921	7487	420	42	13	33	Outside of the helmet
Welder (I)	1615-1907	8692	4099	224	26	9	15	Inside of the helmet
Welder (J)	1627-2330	3303	731	50	24	7	10	Outside of the helmet
Welder (L)	1622-2330	2436	818	155	222	68	10	Outside of the helmet
Welder (K)	1620-2330	4231	872	177	299	89	13	Outside of the helmet
Welder (K)	1620-2330	1039	349	76	103	33	5	Inside of the helmet

* Micrograms per cubic meter
N.D. None detected

TABLE II

DUST CONCENTRATIONS ASSOCIATED WITH GRINDING, SANDING, AND SAWING
FAIRBANKS WEIGHING DIVISION
ST. JOHNSBURY, VERMONT

Job Classification	Time	Concentrations in mg/M3	Comments
		July 30, 1975	
Cut-off saw Operator (A)	0734-1155 1300-1550	1.53	Abrasive cut-off wheel, cut-off saw #1231; Dept. 725; total dust
Grinder (B)	1055-1155 1300-1545	1.51	Operated side grinder #1044 for(1-2 Hrs) dual pedestal grinder; Dept. 752; total dust
Belt Sander (C)	0740-1145	44.5	Suspect invalid sample; total dust; Dept. 753
Belt Sander (C)	1310-1550	8.7	Total dust; exhaust not on; Dept. 753
Belt Sander (C)	1310-1550	2.1	Respirable dust, exhaust not on Dept. 753
Grinder (D)	0742-0945	1.5	Double grinder; Dept. 752
		December 2, 1975	
Belt Sander (E)	0741-1147 1302-1540	1.86	Total dust
	(same)	0.37	Respirable dust
Belt Sander (F)	0752-1150 1300-1540	0.79	Total dust
	(same)	0.21	Respirable dust
Drill Machine Operator (G)	0755-1147 1303-1540	0.64	Total dust
	(same)	0.09	Respirable dust

TABLE II (contd)
DUST CONCENTRATIONS ASSOCIATED WITH GRINDING, SANDING, AND SAWING
FAIRBANKS WEIGHING DIVISION
ST. JOHNSBURY, VERMONT

Job Classification	Time	Concentrations in mg/M^3	Comments
Cut-off saw Operator (H)	0815-1152		
	1312-1535	0.42	Total dust; Saw 5065
	(same)	0.36	Respirable dust; Saw 5065
Cut-off saw Operator (A)	0816-1160		
	1312-1535	5.27	Total dust; Saw 1231
	(same)	0.20	Respirable dust
		December 3, 1975	
Cut-off saw Operator (A)	0707-1130		
	1252-1545	0.30	Total dust
	(same)	0.20	Respirable dust
Cut-off saw Operator (H)	0713-1130		
	1252-1545	0.46	Total dust
	(same)	0.33	Respirable dust
Belt Sander (C)	0730-1125		
	1255-1545	23.96	Total dust
	(same)	0.19	Respirable dust
Drill Machine Operator (G)	0725-1125		
	1255-1545	1.07	Total dust
	(same)	0.30	Respirable dust
Belt Sander (F)	0727-1125		
	1255-1545	1.97	Total dust
	(same)	0.81	Respirable dust

TABLE II (contd)
DUST CONCENTRATIONS ASSOCIATED WITH GRINDING, SANDING, AND SAWING
FAIRBANKS WEIGHING DIVISION
ST. JOHNSBURY, VERMONT

TABLE II (contd)

Job Classification	Time	Concentrations in mg/M^3	Comments
Grinder (D)	1300-1545	2.03	Total dust; Dept. 752
Grinder (D)	1300-1545	1.11	Respirable dust; Dept. 752
		December 4, 1975	
Belt Sander (C)	1629-2053 2127-28327	0.18	Total dust
	(same)	0.09	Respirable dust
Cut-off saw Operator (C)	1637-2050 2125-2330	0.37	Total dust
	(same)	0.26	Respirable dust
Grinder (J)	1647-1910	2.65	Total dust; Dept. 752
Grinder (J)	1647-1910	2.26	Respirable dust; Dept. 752