





The Isocure Area contains three large core making machines and eleven small core machines. The second area, the coreroom, contains one new core machine. This machine is provided with a system to scavenge waste gas. Initially the machine was set up to operate using dimethylethylamine (DMEA) as the catalyst. Due to the complaints from employees on the odor as well as reported symptoms of headache, nausea and eye and throat irritation, the machine was modified to use TEA. Approximately twenty individuals are also employed in this area washing cores and assembling core parts. The rough edges and ridges are smoothed off the cores (washing cores) and the various components are assembled. (The Shamrock Core Paste is used, on an experimental bases, to bind core components together.)

Several employees involved in the study worked in the Pattern Shop. The Pattern Shop is located in a separate building from the Isocure and Coreroom Areas. In the Pattern Shop, the various patterns used in the core machines are built, modified and repaired. Work consists of using casting plastics and wood to build or repair the patterns. In the process various types of woodworking and machining operations are used. This work varies depending on the pattern being made or repaired. If a pattern is being repaired, it first must be cleaned. The patterns contain varying quantities of the sand mixture when they arrive at the Pattern Shop. This must first be removed and the pattern then cleaned using mineral spirits. A tank containing mineral spirits is located at one end of the shop. An exhaust fan is located on the wall above the tank. The frequency of use varies from day to day and individual to individual.

#### B. Evaluation Methods

An initial environmental survey was conducted at Westinghouse Air Brake on May 17-18, 1977. Air samples for triethylamine were obtained in the breathing zone of thirteen workers and in selected areas of potential maximum concentrations. Samples were collected in impingers containing 0.05 M sulfuric acid at a flow rate of 1 liter per minute. A personal and area sample were also taken for the methylene chloride in the Shamrock core paste. Samples were collected on charcoal tubes at a flowrate of 50 cc/min. Both sets of samples were analyzed by gas chromatographic procedures. Brief medical interviews were also conducted with twelve employees to determine if they were experiencing any health problems.

A follow-up environmental-medical survey was conducted on November 14-17, 1977. Personal breathing zone sample for triethylamine were collected on silica gel tubes at 50 cc/min. and analyzed by gas chromatographic procedures. Thirty-three employees were interviewed, examined and patch tested. The questionnaire obtained personal identification data, occupational history and past and present medical history. (Table 1) An examination of the chest, back, arms and legs was performed to determine the presence of any skin problems. The patch tests were applied to the upper left quarter of the back. Patch tests were applied



















Westinghouse Air Brake Company  
 Wilmerding, Pennsylvania  
 November 1977

Complaints  
 HHE 77-71

Table II

Section	Known Allergic	Skin Problems		Receiving Treatment for Skin Problems	
		Work Related	Non-Work Related	Work Related	Non-Work Related
Coreroom	2	3	1	3	1
Isocure Machine Operators	1	0	0	0	0
Pattern Shop	3	1	1	1	1
TOTAL	6	4	2	4	2



Table III (con't)

	1		2		3		4		5	
	Water		TEA		Isocure I		Isocure II		Acetone	
	48 hrs	72 hrs	48 hrs	72 hrs	48 hrs	72 hrs	48 hrs	72 hrs	48 hrs	72 hrs
120	-	0	-	0	-	0	-	0	-	0
121	-	-	-	-	-	-	-	-	-	-
122	-	-	-	-	-	-	?+	-	-	-
123	-	-	-	-	-	-	-	-	-	-
124	-	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
127	-	-	-	-	-	-	-	-	-	-
128	-	-	-	-	?+	-	-	-	-	-
129	-	-	-	-	-	-	-	-	-	-
130	-	-	-	-	-	-	-	-	-	-
131	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	-	?+	-	-	-
133	-	-	-	-	-	-	-	-	-	-
C - 134	-	0	-	0	-	0	-	0	-	0
C - 135	-	-	-	-	-	-	-	-	-	-
C - 136	-	-	-	-	-	-	-	-	-	-
C - 137	-	-	-	-	-	-	-	-	-	-
C - 138	-	-	-	-	-	-	-	-	-	-

0 not read

negative reaction

doubtful reaction

+ weak (nonvesicular) reaction

++ strong (edematous or vesicular) reaction

+++ extreme reaction, e.g., markedly bullous or ulcerative

Table IV

Westinghouse Air Brake  
Wilmerding, Pennsylvania

November 15, 1977

Results of Airborne Concentrations of Triethylamine  
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<u>Sample Location</u>	<u>Sample Number</u>	<u>Sampling Period</u>	<u>Sample Volume</u> (liters)	<u>Triethylamine</u> (ppm)
Millwright A	SG-1	7:26 - 13:45	22.6	0.005
Millwright B	SG-2	7:27 - 13:35	18.7	0.039
No. 2 Core Machine Oper.	SG-3	7:30 - 13:43	23.8	N.D.
No. 315 Dermier Oper.	SG-4	7:33 - 13:46	20.4	0.003
No. 4 Core Machine Oper.	SG-5	7:37 - 13:45	18.9	N.D.
Sand Mixer	SG-6	7:45 - 13:47	18.0	0.008
CB22 Core Operator	SG-7	7:52 - 13:37	19.2	0.004
No. 1 Core Machine Oper.	SG-8	7:50 - 13:44	23.3	0.003
Room Machine Operator	SG-9	8:03 - 14:00	18.9	N.D.
Core Washer	SG-10	8:10 - 14:05	19.4	N.D.

Limit of detection - 0.05 ug/tube