

SPECIAL HAZARDS SURVEY

Prepared for: GOODYEAR TIRE AND RUBBER CO.
NIAGARA FALLS PLANT
5408 BAKER AVENUE
NIAGARA FALLS, NEW YORK

SUBJECT

INDUSTRIAL HYGIENE SURVEY

P.S. PERSONAL SERVICE
FROM THE OFFICE OF

ALEXANDER & ALEXANDER

Prepared by:

S. R. WHEELER
INDUSTRIAL HYGIENIST

Survey date:

FEBRUARY 2, 1970

An Engineering Service of:



Hartford, Connecticut

This report is prepared to assist the named insured in a loss control program. It is confidential and is not to be used for any other purpose. It does not purport to include every loss potential, code violation or exception to good practice but relates only to those hazards specifically examined and described herein.

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GOODYEAR TIRE AND RUBBER CO.
NIAGARA FALLS PLANT
5408 BAKER AVENUE
NIAGARA FALLS, NEW YORK

February 2, 1970

PURPOSE: This survey was conducted at the plant's request to evaluate the employee exposure to various air contaminants in the vinyl compound plant. Several noise level readings were taken within this area to determine the employee exposure to noise, also.

CONTACTS: With our Buffalo Engineering Representative, Mr. R. Narad, I contacted the following gentlemen: Mr. J. Pollock, Personnel Manager; Mr. T. Gilmore, General Foreman, Department 232; Mr. J. Blickley, General Foreman, Department 245.

CONCLUSION: Our air sampling results indicate the airborne concentration of contaminants in the vinyl compound plant are below the recommended threshold limit values established by the American Conference of Governmental Industrial Hygienists.

The noise level readings obtained in the vinyl compound plant were in a marginal range, 87-89 DBA, even though below the recommended criteria established by the Walsh-Healey Public Contracts Act. Studies should be made of those areas where noise criteria exceeds 90 DBA in an effort to reduce noise exposure and the potential hearing impairment.

Two samples were taken in Building No. 32 to determine the concentration of airborne organic vapors. The results obtained from these samples indicate the airborne concentration to be above the recommended threshold limit value. Effort should be made to reduce the airborne concentration by providing better ventilation and improving housekeeping conditions.

PROCEDURE: The organic solvent vapor samples were collected using silica gel tubes. In this method, air is drawn through a collecting medium, silica gel, which absorbs the solvent vapors. The solvent is then extracted chemically and analyzed in a gas chromatograph. Having collected the solvent vapor at a known flow rate, and for a known time, the airborne concentration can be determined. The dust samples were collected by drawing air at the rate of 0.1 cubic feet per minute through midget impingers containing distilled water as the collecting medium.

Lead and chrome dusts were collected on millipore membrane filters at a flow rate of 20 liters per minute. These samples were then returned to our Hartford Laboratory for analysis. The samples were then analyzed polarographically, using a SARGENT, Model XV Polarograph.

Two methods were used in sampling for hydroquinone. Both the midjet impinger technique and the millipore technique were employed in sampling. These samples were then analyzed on a BECKMAN Model DU Spektrophotometer.

RESULTS: Listed in Appendix A are the results of our air sampling. For each location sampled, I have included the contaminant sample for, and also its prospective threshold limit value. The noise level readings and their locations are given in Appendix B.

DISCUSSION: In interpreting the results of our air samples for chemical substances, we used as a guide the threshold limit values (TLV), which have been adopted by the American Conference of Governmental Industrial Hygienists. These TLV's should be used as a guide in the control of health hazards and should not be regarded as fine lines between safe and dangerous conditions. They represent conditions under which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effects. The values given refer to a time-weighted average concentration for a normal workday, unless otherwise assigned a ceiling limit. Where assigned a ceiling limit, that concentration should not be exceeded, even for short periods of time. The samples taken during this survey were not for contaminants with ceiling limits. The threshold limit values, as well as the particular contaminant, are given in Appendix A. The results of the survey for chemical contaminants did not indicate any exposure in excess of the recommended levels in the vinyl compound plant area. However, our data (samples 8 and 9, Appendix A) indicate the airborne concentration of organics solvent vapors in Building No. 32 to be in excess of the recommended threshold limit value. Since toluene is the most toxic vapor present at this location, the air sample results were based upon the threshold limit value for toluene. Control measures should be adopted in this area to help reduce the employee exposure to these organic vapors.

The hydroquinone samples taken in the dedic transfer area were representative of general background concentrations. The concentrations I found were, I consider, fairly high for a general background reading. The airborne concentration may indeed increase when the dedic hopper is being loaded and unloaded. Due to a faulty valve on one of the reactors, a transfer of material could not be accomplished when the samples were taken. Perhaps when normal operations resumes, it might be wise to further monitor this area to determine more accurately the concentration of hydroquinone in the air.

Continuous exposures to excessive noise will lead to permanent hearing losses. An individual who is hypersensitive to noise could easily develop a partial hearing impairment at a noise level reading below the 90 DBA criteria established by the Walsh-Healey Public Contracts Act.

To reduce the noise exposure, I would suggest a study be made of those areas where noise results exceed 85 DBA. The primary noise sources should be pinpointed and efforts should be made through engineering control to lower the exposures.

An alternate method of noise control is the use of personal protective devices, such as ear plugs or ear muffs, rather than environmental control. In the event that these are chosen for the controls, each employee should be correctly fitted for the chosen defender by a competent person, and these devices should be kept thoroughly clean so as to avoid possible ear infection.

RECOMMENDATIONS:

- A. Additional control measures should be implemented in Building No. 32's reactor and storage tank area to reduce the airborne concentration of solvent vapors in the employees' working environment.
- B. Efforts should be made through engineering controls to reduce the noise levels within the plant to 90 DBA.
- C. A hearing conservation program should be instituted which includes pre-employment audiometric testing.

Steven R. Wheeler
Steven R. Wheeler
Industrial Hygienist

APPENDIX A

GOODYEAR TIRE & RUBBER CO.
NIAGARA FALLS, NEW YORK

February 12, 1970
Air Sampling Results

<u>No.</u>	<u>Time</u>	<u>Contaminant</u>	<u>Location</u>	<u>Results</u>	<u>TLV</u>
1.	10:40 am	Dust	Fourth floor mixing, OBZ.	11.5 mppcf	50 mppcf
2.	10:54 am	*	Top of Banbury Mixer, general area.	trace	---
3.	11:15 am	Lead	Top floor compounding room, OBZ.	0.02 mg/m ³	0.20 mg/m ³
4.	11:45 am	Chrome	Top floor compounding room, OBZ.	0.17 mg/m ³	0.50 mg/m ³
5.			Roll Machine.	trace	---
6.	1:41 pm	Hydroquinone	Bldg. No. 33-dedic transfer, hopper loading station, general area, BZ.	1.2 mg/m ³	2.0 mg/m ³
7. **	1:45 pm	Hydroquinone	Bldg. No. 33-dedic transfer, hopper loading station, general area, BZ.	1.4 mg/m ³	2.0 mg/m ³
8.	2:16 pm	Toluene	Bldg. No. 32-2-between reactors No. 1 and 2, BZ.	255 ppm	200 ppm
9.	2:10 pm	Toluene	Bldg. No. 32-1-chemical storage tanks, general area, BZ.	274 ppm	200 ppm

OBZ - Operator's Breathing Zone

ppm - parts contaminant per million parts of air

mg/m³ - milligrams contaminant per cubic meter of air

**Sample 7 and 6 were taken using different sampling techniques.

*Vinyl Chloride & associated vapors

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APPENDIX B

GOODYEAR TIRE & RUBBER CO.
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5108 BAKER AVE.
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February 12, 1970
Noise Level Readings

<u>No.</u>	<u>Location</u>	<u>"A" Scale Reading</u>	<u>"Overall" C Network</u>
1.	Dicer Station-approximately 6 feet from dicer.	87	93
2.	Roll Station-at operator's desk.	87	93
3.	Roll Station-adjacent to rollers.	89	96

Sound level readings were obtained using a General Radio Company, Type 1505-A,
Sound Level Meter.