

FILE NAME: Goodyear (GY)

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DIVISION OF SAFETY AND HYGIENE
January 27, 1950

Report on Claim No. O. D. 5022-22, Howard Schabas, Decedent - Goodyear Tire & Rubber Co.

On January 24 and 25, 1950, a visit was made to the above named company to re-check the benzol concentrations in their Tire Building Department. This visit was made at the request of Mr. Blake and the Industrial Commission upon a motion made by Mr. Blake as indicated in the Memorandum of Findings and Orders regarding the above numbered claim.

Contact was made with Jack Kidney, Safety Director; K. A. Nelson, Industrial Hygienist; R. W. Pickes, Assistant Safety Director and C. W. Sowers, Division Foreman of the Tire Building Plant.

Decedent in this claim was a tire builder. According to information obtained, he built 24 tires per six-hour shift. There are sixty-one tire building machines in the room where decedent had worked in Building #5, fifth floor. Decedent's machine was #11.

There are seven hundred and forty-two (742) men working daily in several departments of the tire building plant. NONE of these men has had any trouble from benzol. No pure benzol can be obtained from the cement house where it is stored by anyone, not even the Division Foreman of the Tire Building Plant. That is, no signature is recognized to obtain benzol.

The writer considers the above statement to be a very important factor in the adjudication of this claim.

The only benzol in the tire building room is in the tire cement. There are two grades of this cement. One is called "heavy" cement and consists of 28 pounds of solids plus 36 gallons of benzol. The solids are resins and rubber. The "light" cement is made up of 4 parts per volume of "heavy" to 6 parts per volume of benzol.

There are 61 small open cans of about one quart capacity of core cement in this room, one at each tire building machine. Employees are required to use a paint brush which is kept in the core cement to apply a small amount of cement to the edge of the drum while this drum is revolving at approximately 200 rpm.

A stop watch was used to check the time an employee consumed in doing this one operation.

It is very difficult to give an exact detailed description of how each individual tire builder works, but general investigation disclosed that there were two methods of applying the benzol cement to the drum of the tire machine. One builder may apply the cement first, then apply the various plys; another may build the tire first and then apply the cement last. One employee, for some reason, applied two coats of this cement while another only applied one coat. In the great majority of cases, only one coat is applied.

By the stop watch check it was found that the man applying two coats consumed 22/100ths of a minute for the operation, or approximately 13 seconds. The others consumed 9/100ths of a minute, or approximately 6 seconds. Therefore, the average time for the average worker consumed in a 6-hour shift is two minutes - six seconds at intervals of about 15 minutes over the 6-hour period.

The writer was requested to obtain the parts per million of benzol to which the decedent had been exposed in his work.

Several months ago the writer visited the Goodyear Tire and Rubber Company and made two tests at a tire building machine, using an approved benzol indicator. The concentrations shown on the indicator ranged from 50 to 80 parts per million. In view of the fact that only benzol vapors were thought to be present in the core cement because benzol was incorporated in the core cement, a report to that effect was made. However, on a second investigation it was disclosed that a product called "Taxine", which is the company's code name for a petroleum naphtha, was also used in considerable amounts at the tire building stations. This petroleum naphtha would, of course, affect the benzol indicator which would not then show a true reading for benzol.

The writer estimates that the amount of error may be as great as 50%, thus lowering the benzol concentrations from the original concentration of from 50 to 80 parts per million to one of from 25 to 40 parts per million.

The benzol indicator shows a more or less "grab" sample and would, of course, only show the benzol fumes present at that particular instant.

To attempt to show a top maximum concentration by any other method than the benzol indicator test is extremely difficult for the reason that the collection of samples for chemical analysis must be taken over a period of time so as to collect at least one cubic foot of air. The pump used to take some tests only pulls 1/10th of a cubic foot of air per minute, thus requiring a ten minute sampling period. In the ten minute period the concentrations, whatever they may be, are continually being diluted both by general ventilation and by the movement of the drum which acts as a fan. To prove this, a volometer was used which showed that a movement of air at the edge of the drum equalled 200 lineal fpm.

The writer does not know of any method which could determine the top concentration of benzol in the air requiring only six seconds sampling time. Even if there were one, this six seconds could not be construed to show a concentration comparable to a six-hour exposure.

Two samples were taken in an attempt to show the general concentration of benzol in the air around the tire building machines. It required ten minutes to take each sample. Sample #1 was taken when the core cement was first applied and in the breathing zone of the operator. It contained from 10 to 15 parts per million. Sample #2 was taken when the cement was applied to the spinning drum. Continuous sampling was maintained even though the operator walked away from the machine to hang a tire on the conveyor line. Sample #2 contained from 5 to 10 parts per million. These samples were run using a special type of chemical analysis and under the supervision of the writer by Mr. Keaton, Industrial Hygienist for Goodyear, with the help of an analytical chemist in the Goodyear Laboratory. Both men are experienced analytical analysts. Their technique is of the highest order and the results of their work is not subject to question. The writer watched each and every operation necessary to complete the analysis.

It was thought by the writer that the decedent may have come into contact with a material containing benzol when he washed the rubber compounds off his hands. An investigation disclosed that in the main change house, or wash room, there is a can of coal oil furnished for this purpose. One employee said that even that is unnecessary as plain soap and water was effective in removing the rubber compounds readily.

This claim presents a problem in which one cannot specifically point out the decedent's top exposure to benzol fumes. We have worked under the assumption that 35 parts per million of benzol was a safe concentration. The continual dilution of the benzol fumes produced in this minute application of core cement seems, to the writer, to be almost impossible for adequate determination.

One cannot justifiably say that the decedent has had no exposure to benzol. Nor can it be stated that he has had exposure to high concentrations. His exposure to high concentrations would be only momentary.

The writer wishes to take full responsibility for the miscalculation of the first benzol determination by the benzol indicator.

Two letters have been written requesting the percentage of benzol in the rubber solvent naphtha furnished Goodyear by The Bay Refining Company of Saginaw, Michigan and by The Woodruff Oil Company of Mt. Pleasant, Michigan, both of which Goodyear codes as "Tazine".

Upon receipt of the above information, a supplementary report will be submitted incorporating such information therein.

Respectfully submitted,

DH:fai

JOHN HANNA
SAFETY ADVISOR

3