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Please see enclosures for toxicological information pertaining to polyesters. These abstracts were obtained from Patty's Industrial Hygiene and Toxicology, 3rd Revised Edition, and Hamilton and Hardy's Industrial Toxicology, Fourth Edition. Also enclosed are abstracts for hydroxyethyl cellulose that were obtained from Patty's Industrial Hygiene and Toxicology. According to their vendors and material safety data sheet (MSDS), hydroxyethyl cellulose and sulfonated polyester are "non-hazardous." Also enclosed is an abstract entitled "Dyes and Dyestuffs" that was obtained from the Encyclopedia of Occupational Health and Safety, International Labor Office, Geneva. Additional toxicological information pertaining to disperse dyes has been requested from the division's Resource Center, and any relevant information will be included with this report.

Disperse dyes "may be in any of three clearly defined chemical classes: (a) nitroarylamine; (b) azo and (c) anthraquinone, and almost all contain amino or substituted amino groups but no solubilizing sulfonic acid groups. They are water insoluble dyes introduced as a dispersion or colloidal suspension in water and are absorbed by the fiber after which they may remain untreated or be aftertreated (diazotized) to produce the final color." Source: The Condensed Chemical Dictionary, Tenth Edition.

A second material sewed by the claimant and referred to as "vinyl" consists of the following ingredients:

- Polyvinyl chloride - 40%
- Mixed C₇ to C₁₁ phthalate esters - 29%
- Polyester fibers and polyester polyurethane foam - 18.5%
- Calcium carbonate - 4.4%
- Various insoluble pigments - 3.1%
- Alumina trihydrate - 2.1%
- Antimony trioxide - 1.7%
- Mixed barium, cadmium, and zinc phenates - 1.2%

The various pigments used for the vinyl includes the following:

- Titanium dioxide
- Carbon black
- Iron oxide red
- Iron oxide yellow
- Ultra-marine blue
- Phthalocyanine blue
- Phthalocyanine green
- Quinacridone violet
- Quinacridone red
- Chromophthal red 3B (Anthraquinoid)
- Irgazin yellow (Isoindolinone)
- Orange GR (Perinone)
- Pyrazalone red
- Chromophthal scarlet R (azo)

According to Hamilton and Hardy's Industrial Toxicology, Fourth Edition, "The vinyl group of plastics include polyvinyl chloride (PVC) used in floor tiles, ducts, waterproof clothing and upholstery, insulations, and piping. In all of these applications the finished plastic has been found to be without injurious properties." Likewise, "Physiologically, the phthalates represent one of the lowest toxicity classes used in industry. Commonly, they have not presented dermal problems, are not absorbed through the skin, and are not appreciably hazardous by inhalation." Source: Patty's Industrial Hygiene and Toxicology, Third Revised Edition. Please see enclosure pertaining to polyesters and "Polyurethane Foams." This latter abstract was obtained from Patty's Industrial Hygiene and Toxicology, Third Revised Edition.

Also enclosed are documentations for "Calcium Carbonate," "Antimony and Compounds," "Barium," "Cadmium and Compounds," "Titanium Dioxide," "Carbon Black," and "Iron Oxide." These documentations were obtained from the Documentation of TLV's and BEI's, American Conference of Governmental Industrial Hygienists (ACGIH). Toxicological information for alumina trihydrate, zinc phenate, and the remaining pigments has been requested from the division's Resource Center, and any relevant information will be enclosed.

A third material sewed by the claimant was upholstery leather. This material consists of the following:

<u>INGREDIENTS</u>	<u>PERCENT</u>
Moisture	7-13
Collagen or cowhide	55-65
Fish, vegetable, or mineral oils	5-15
Protein intermediates (from flours)	trace
Chromic oxide (Cr_2O_3)	3-6
Aqueous extracts of barks, woods, leaves, etc.	0-15
Inorganic salts (NaCl , CaSO_4)	3-8
Biocide	trace

According to information provided, the leather was dyed with one or more combinations of thirteen acid dyes, six direct dyes, and one Mordant Brown dye. Trace amounts of pigments may also be found in the leather. Information pertaining to inhalation exposure to dyed leather dust has been requested from the division's Resource Center, and any relevant data will be enclosed with this report.

During the undersign's visit to the General Motor's Euclid Avenue plant, sewing operations allegedly similar to those performed by the claimant were observed. The sewing machine operators appeared to have low-level breathing zone exposures to prima cloth dust, very low-level exposures to airborne vinyl fabric dust, and little, if any, exposure to airborne leather dust. However, very low-level exposures to leather dust probably occurs sporadically.

According to a representative of the leather supplier, formaldehyde has never been used in their product, and the odor from the leather that the claimant was exposed to is reportedly from the fish, vegetable, and mineral oils and the aqueous extracts of barks, woods, leaves, etc. The odor was said to be a desired property of their leather product.

The exposure to "fumes" that is mentioned by the claimant in the claim file includes a substance that occasionally remains on the vinyl fabric inadvertently when received from the supplier. The claimant referred to this substance as formaldehyde; however, the supplier's representative stated that the chemical was methyl ethyl ketone and not formaldehyde. Formaldehyde is listed as an agent that may cause occupational asthma; methyl ethyl ketone is not. Documentations are enclosed for "Methyl Ethyl Ketone" and "Formaldehyde." These documentations were obtained from the Documentation of TLV's and BEI's, ACGIH.

In summary, the claimant was employed by General Motors Corporation for approximately eleven years as a sewing machine operator. During most of this time she recurrently sewed three main types of automotive upholstery materials referred to as prima cloth, vinyl, and leather. She appears to have had exposures to low-level airborne concentrations of dyed prima cloth dusts, very low-level exposures to airborne colored vinyl fabric dusts, and probably some sporadic very low-level airborne concentrations of dyed leather dusts during her tenure.

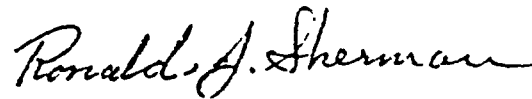
Although the claimant alleges exposure to formaldehyde, the upholstery material suppliers' representatives deny having used formaldehyde in their products. In one particular case

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mentioned by the claimant, involving the vinyl fabric, the alleged offending exposure was from methyl ethyl ketone vapors and not formaldehyde, according to the fabric manufacturer's representative.

The odors observed by the claimant while sewing leather were reportedly from its fish, vegetable, and mineral oils as well as from the aqueous extracts of barks, woods, leaves, etc.

Sincerely,

A handwritten signature in cursive script that reads "Ronald J. Sherman".

Ronald J. Sherman
Industrial Hygienist

RJS/vw
Enclosures

Gen. Motors
Inland Div.
Euclid Plant
- Euclid
6 pages

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