|  |  |
| --- | --- |
| **Supplemental Table II.** Reported chemical exposures for workers included in reviewed studies | |
| **Reference** | **Reported chemical exposures** |
|  |  |
| ***Case Reports*** | |
|  |  |
| Moscato, et al. (1987) | Ethylbenzene, **styrene** |
|  |  |
| Moscato, et al. (1988) | Aromatic hydrocarbons, diglycol either, glycol ether, high-boiling solvents (not specified), inorganic pigments (not specified), organic pigments (not specified) **styrene**, titanium dioxide, vinyl resin |
|  |  |
| Hayes, et al. (1991) | Fiberglass: cobalt octoate, peroxidase, **styrene** |
|  |  |
| Shields, et al. (1996) | Fiberglass, methylethylketone, peroxide, silica, **styrene** |
|  |  |
| Janigan, et al. (1997) | Smoke from burning wood particle-board paneling and polystyrene insulation: bromine, nitrogen oxides, **styrene**, urea-formaldehyde polymers |
|  |  |
| Korea OHSA (2003) | Rubber fumes, **styrene** (Lee, et al) |
|  |  |
| Fernandez-Nieto, et al. (2006) | Paints: hexamethylene diisocyanate; polyester resins: **styrene** |
|  |  |
| Volkman, et al. (2006) | Fiberglass reinforced plastics: di-methyl phthalate, **styrene** |
|  |  |
| Ye, et al. (2007) | Toluene diisocyanate, **styrene** |
|  |  |
| Cullinan, et al. (2013) | Glass reinforced plastics: acetone, butanone, butyl acetate, N, N-diethylaniline, diethylene glycol, dimethyl phthalate (2 of 6 cases), isophorone diisocyanate, methylethyl ketone peroxide (2 of 6 cases), **styrene** Case #6: diacetone alcohol, diethylene ethylbenzene, N,N-dimethylaniline, docosane, 1-ethyl-2-methyl-benzene, 1-ethyl-3-methyl-benzene, glycol monobutyl ether, dimethyl phthalate, 2-ethylexanoic acid, N-methylaniline, N-methylbenzanilide, **styrene**, 1,1,2,2-tetrachlorethane, tetracosane, tricosane, NN2-trimethylaniline, 1,2,3-trimethylbenzene, m-xylene, o-xylene, p-xylene |
|  |  |
| Chen, et al. (2013) | Fiberglass reinforced plastics: methyl ethyl ketone peroxide, **styrene** |
|  |  |
| Lee, et al. (2013) | Benzenepropanoic acid, dimethylpolysiloxane, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-ester, hydrotreated light distillate, isobutene, liquefied petroleum gas, n-butane, octadecyl ester, solvent-dewaxed heavy paraffinic distillate, **styrene** |
|  |  |
| Arochena, et al. (2014) | **Styrene** |
|  |  |
| CDC (Unpublished) | Acetone, **styrene**, wood dust |
|  |  |
| Huang (unpublished) | Fiberglass |
|  |  |
| Convery, et al. (2001) | Amine accelerator, benzaldehyde, benzamine, dibenzoyl peroxide, diethyl methyl phenol, dimethyl dioxane, dioxolane, long-chain hydrocarbons, polyester resin, **styrene**, toluene, xylene |
|  |  |
| ***Cross-sectional Studies*** | |
|  |  |
| Chmielewski and Renke (1975) | **Styrene** |
|  |  |
| Lorimer, et al. (1976, 1978) | Benzene, coke-oven byproducts, ethylbenzene, polystyrene, **styrene** |
|  |  |
| Härkönen (1977) | Acetone, **styrene** |
|  |  |
| Axelson and Gustavson (1978) | **Styrene** |
|  |  |
| Thiess, et al. (1978) | Ethylbenzene, polystyrene, **styrene** |
|  |  |
| Jedrychowski (1982) | Methyl methacrylate, **styrene** |
|  |  |
| Jedrychowski and Fonte (1984) | Ammonia, benzene, butadiene, methyl methacrylate, **styrene** |
|  |  |
| Robins, et al. (1990) | Epoxy resin/hardener or polyester resin/**styrene** system |
|  |  |
| CDC (1992) | Acetone, **styrene**, wood dust |
|  |  |
| Lewin-Kowalik, et al. (1994) | Aromatic hydrocarbons, benzene, ethylbenzene, polystyrene, **styrene**, toluene |
|  |  |
| Tuček, et al. (2002) | Acrylonitrile, n-butanol, butyl acrylate, ethyl acrylate, methyl acrylate, methyl methacrylate, toluene, **styrene** |
|  |  |
| Oner, et al. (2004) | Cobalt octoate, organic peroxidase, polyester resin, **styrene** |
|  |  |
| Sati, et al. (2011) | **Styrene** |
|  |  |
| Helal and Elshafy (2013) | **Styrene** |
|  |  |
| McCague, et al. (2015) | Dust, **styrene**, xylene (CDC 2009) |
|  |  |
| ***Mortality Studies*** | |
| Cohort and Reference |  |
|  |  |
| A — Frentzel-Beyme et al (1978) | Polystyrene, **styrene** |
|  |  |
| B — Marsh, et al. (2001) | For 3 of the 10 plants included in this analysis: asbestos, asphalt, epoxy, formaldehyde, phenolics, polycyclic aromatic hydrocarbon, silica, **styrene**, urea |
|  |  |
| C — Ott, et al. (1980); Bond, et al. (1992) | Acrylonitrile, anthranquinone blue, antimony, arsenic, azo red dyes, barium sulfate, benzene, 1,3-butadiene, butyl stearate, cadmium lithopone, cadmium selenide, carbon black, carbon tetrachloride, chromium oxide, diethylbenzene, 2,6-di-tertiary-butyl-4methyl phenol, ethylbenzene, ethyltoluene, iron oxide, isopropylbenzene, lead chromate, mineral oil, oligomers of styrene, ortho-dichlorobenzene, perchloroethylene, phthalocyanine, plasto yellow Y, polybutadiene rubber, polymer dusts, polystyrene, Stoddard’s solvent, strontium sulfide, **styrene**, titanium dioxide, waxoline green, zinc oxide, zinc stearate, zinc sulfide |
|  |  |
| D — Bond, et al. (1985); Olsen, et al. (1994); Burns and Carson (2003) | Agricultural products, allyl chloride, caustic soda, chlorinated solvents, chlorine, epichlorhydrin, epoxy resin, ethylene, ethylene dichloride, glycols, hydrocarbons, isocyanates, latex, magnesium metal, plastics, polyurethanes, propylene, **styrene**, vinyl chloride |
|  |  |
| E — Nicholson, et al. (1978) | Benzene, ethylbenzene, polystyrene, **styrene**, toluene, xylene |
|  |  |
| F — Meinhardt, et al. (1982) | Butadiene, n-dodecyl mercaptan, iron ethylenediaminetetraacetate, paramenthane hydroperoxide, soap flakes, sodium formaldehyde, **styrene**, sulfoxyide |
|  |  |
| G — Matanoski and Schwartz (1987); Matanoski, et al. (1990); Sathiakumar, et al. (1998); Sathiakumar and Delzell (2009) | Aromatic oils, 1,3-butadiene, carbon black, diphenylamine, hydroquinone, mercaptan, p-methane hydroperoxide, soap, sodium dimethyldithiocarbamate, **styrene**, sulfuric acid, thiocarbamate |
|  |  |
| H — Welp, et al. (1996) | **Styrene** |
|  |  |
| I — Hodgson and Jones (1985) | **Styrene** |
|  |  |
| J — Coggon, et al. (1987, 2015) | Acetone, asbestos, glass fiber, methyl ethyl ketone, organic peroxides, **styrene** |
|  |  |
| K — Wong, et al. (1990, 1994, 1999); Collins, et al. (2013) | Acetone, asbestos, poly resin, **styrene** |
|  |  |
| L — Okun, et al. (1985); Ruder, et al. (2004, 2016) | Acetone, benzoyl peroxide, cobalt hapthenate, fibrous glass, glycols, hexamethylene diisocyanate, methylene diphenyl diisocyanate, methyl ethyl ketone peroxide, naphthasorganic peroxides, paints, polyester resin, **styrene**, toluene, toluene diisocyanate, urethane paints and varnishes, wood dust, xylene |
|  |  |
| M — Cowles, et al. (1994) | Acrylonitrile, aliphatic amines, aluminum alkyls, amines, anhydrides, antimony, antistatic compounds, aromatic amines, asbestos, benzene, bisphenol acetone, bromo compounds, butane, cadmium, carbon black, carbon tetrachloride, copper-phthallo compounds, epichlorohydrin, epon-1002, ethyl acrylate, ethylene, ethylene propylene diene monomer, ethylene propylene rubber, glass, glycidyl esters, heating oil, ionol, iron, kratons, lead, Lewis acids, liquid resins, methylene chloride, phenol, phenolics, polyethylene, polypropylene, polystyrene, propylene, pyridine, sesqui chlorides, **styrene**, sulfur esters, talc, titanium dichloride, titanium dioxide, titanium tetrachloride, titanium trichloride, toluene, trichlorobenzene |
|  |  |

Abbreviation: CDC, Centers for Disease Control and Prevention