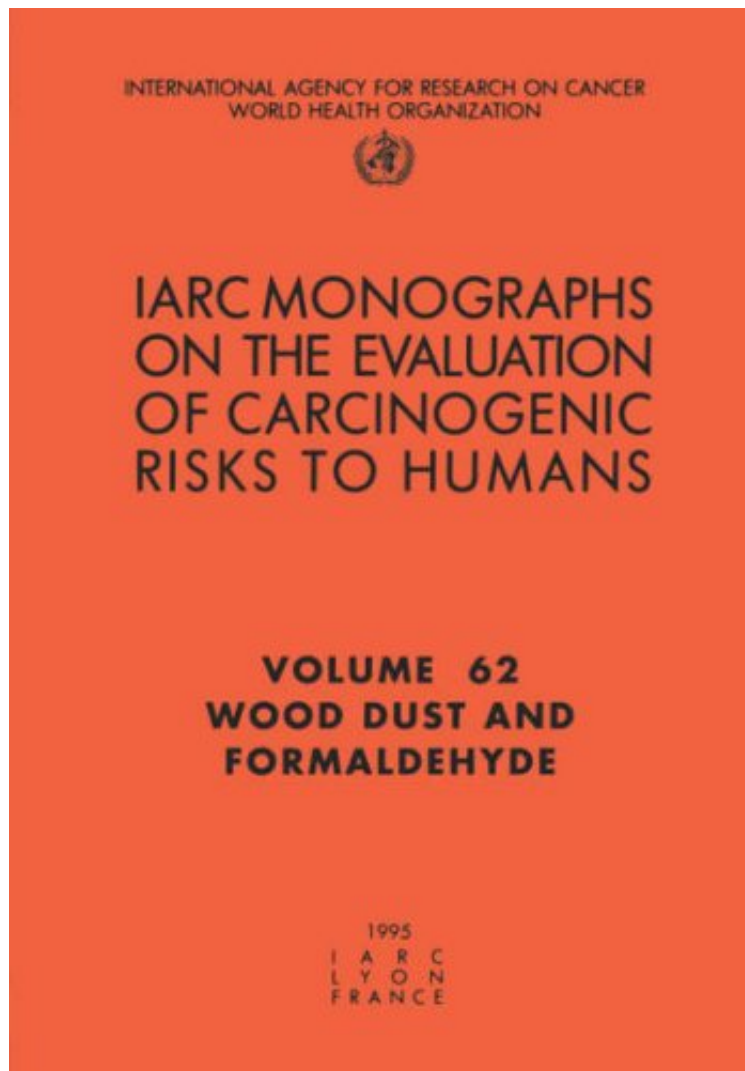


(Pdf free) Wood Dust and Formaldehyde (IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans)

Wood Dust and Formaldehyde (IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans)

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The International Agency for Research on Cancer : Wood Dust and Formaldehyde (IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans) before purchasing it in order to gage whether or not it would be worth my time, and all praised Wood Dust and Formaldehyde (IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans):

0 of 0 people found the following review helpful. Sometimes, older is better. By ToxDoc Ironically, this older IARC Monograph on formaldehyde is superior in some ways to the ones that followed it. The scientific data pertaining to the

carcinogenicity of formaldehyde in humans has not really changed all that much since 1995. However, the conclusions drawn by IARC (as well as EPA and NTP) based on the available data have. IARC Monograph #62 provided an excellent review of the animal and human data of relevance to the chemical's potential for causing cancer. And, the facts of central importance to the risk assessment of formaldehyde remain as true today as they were then, namely: (1) All of the known toxic effects of formaldehyde are confined to the portal of entry; (2) Nasal cancer can be induced in laboratory rats chronically exposed to high levels (6-10 ppm) of formaldehyde associated with sustained levels of cytotoxicity and compensatory cell proliferation, but not to 2 ppm which does not produce such effects. Carcinogenic exposures to formaldehyde are almost non-existent in humans, most of whom would find 6 ppm in air intolerable. (3) Formaldehyde is formed endogenously in large quantities (2-3 ppm in blood) that are rapidly metabolized (half-life = 1.5 minutes in blood). (4) Even high levels of exogenous exposure related to occupation and diet are so much smaller, compared to normal levels of endogenous formaldehyde, that they have no detectable impact on blood levels. This is why the adverse effects of formaldehyde inhalation in humans are generally limited to the portal of entry, i.e., the nasopharynx and upper respiratory tract. Based on "suggestive" evidence of an "association" between occupational exposure to formaldehyde and nasal tumors (only), IARC concluded in 1995 that formaldehyde was "probably carcinogenic to humans" (Group 2A). This conservative conclusion was not entirely consistent with the facts, i.e., from a purely scientific point of view, but was consistent with the Monographs' purpose to serve as "the first step in risk assessment" and with IARC's mission to "assist national and international authorities in... formulating decisions concerning any necessary preventive measures" (IARC Monographs 88, pp 9-10). What happened next, however, has almost nothing at all to do with science and almost everything to do with environmental politics. And it is the reason that I can, without reservation, recommend IARC Monograph 62 over all of the formaldehyde risk assessments that came after it. (Note: This reviewer is a board-certified, PhD toxicologist.)

After the landfall of Hurricane Katrina in 2005, and the subsequent media frenzy over so-called "toxic trailers", formaldehyde became a "celebrity" chemical, and there was mounting political pressure to declare it a human carcinogen. A novel (but subsequently discredited) mechanism was proposed by which inhaled formaldehyde might produce cancer at sites remote to the portal of entry, and epidemiological data formerly recognized as too weak and inconclusive to support any causal inferences were reinterpreted in light of this newly proposed mechanism. Then, in 2006, 2010 and 2011, respectively, IARC, EPA, and NTP (the National Toxicology Program) all officially reclassified formaldehyde as a known human carcinogen. In Monograph 88 (2006), IARC reclassified formaldehyde as a Group 1 carcinogen ("carcinogenic to humans") based on nasopharyngeal cancer (NPC), only. EPA, however, concluded in its June 2, 2010 draft IRIS assessment that formaldehyde also caused lymphohematopoietic (LHP) cancers, especially myeloid leukemia. (This conclusion was later rejected as implausible by the National Academy of Sciences in 2011.) Finally, NTP, which had listed formaldehyde as "reasonably anticipated to be a human carcinogen" since 1981, changed that classification in its 12th Report on Carcinogens (2011) to "known to be a human carcinogen", based on "sufficient evidence of carcinogenicity from studies in humans and supporting data on mechanisms of carcinogenesis". The "supporting data on mechanisms of carcinogenesis" was, of course, a reference to the aforementioned novel, but discredited, proposed mechanism of carcinogenesis for inhaled formaldehyde. In October 2009, IARC decided to harmonize more fully with EPA by updating their 2006 decision to include leukemia, as well as NPC. IARC reportedly reversed its position on the hypothetical leukemogenicity of HCHO in response to a Chinese occupational study (Zhang et al., 2010) in which statistically significant variations in selected hematological values (i.e., complete blood cell counts, hemoglobin, and mean corpuscular volume) were observed in formaldehyde-exposed workers, compared to controls. The authors described these statistically significant variations as "abnormalities" that were "consistent with toxic effects on the bone marrow." In fact, however, all of the reported values for these hematological parameters in exposed workers were well within normal ranges. For all of these reasons, I recommend IARC's 1995 Monograph #62 on formaldehyde over all of its successors. IARC Monograph #88 does review more studies, but its conclusions are demonstrably less valid than those of Monograph #62.

Evaluates the carcinogenic risk to humans posed by occupational exposures to wood dust and formaldehyde. A number of occupational situations that involve exposure to wood dust also entail exposure to formaldehyde, as in plywood and particle board manufacture, during furniture and cabinet-making, and during parquet floor sanding and varnishing. The carcinogenic risks of wood dust are evaluated in the first monograph. The highest occupational exposures were noted to occur in wood furniture and cabinet manufacture, especially during machine sanding and similar operations, in the finishing departments of plywood and particle-board mills, and in the workroom air of sawmills and planer mills near chippers, saws, and planers. Citing findings from several recent well-designed case-control studies, the monograph concludes that occupational exposure to wood dust is causally related to adenocarcinoma of the nasal cavities and paranasal sinuses. The evaluation further concluded that the excess risk of cancer is attributable to wood dust per se, rather than to other exposures in the workplace. Wood dust was classified as carcinogenic to humans. Cancer risk associated with occupational exposure to formaldehyde is assessed in the second

monograph. The assessment draws on findings from several cohort and case-control investigations of the relationship between exposure to formaldehyde and cancer of the oral cavity, pharynx, and respiratory tract. Citing inconsistencies in the reported results, the monograph concludes that these epidemiological studies can do no more than suggest a causal role of occupational exposure to formaldehyde in carcinoma of the nasal cavities and paranasal sinuses. The review found no evidence of excess risk for oropharyngeal, laryngeal or lung cancer among exposed workers. Several studies in which formaldehyde was administered to rats by inhalation showed evidence of carcinogenicity. Similar studies in hamsters showed no evidence of carcinogenicity, and studies in mice either showed no effect or were inadequate for evaluation. In rats administered formaldehyde in drinking-water, increased incidences were seen of forestomach papillomas in one study and of leukemias and gastrointestinal tract tumors in another; two other studies gave negative results. Formaldehyde was classified as probably carcinogenic to humans.

About the AuthorThe International Agency for Research on Cancer (IARC) is part of the World Health Organization. IARC's mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships.