



FORMALDEHYDE:

FACTS AND BACKGROUND INFORMATION

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I. INTRODUCTION TO FORMALDEHYDE

Formaldehyde is a simple chemical made of hydrogen, oxygen and carbon. It is a natural part of our world and is the product of many natural as well as industrial processes. Formaldehyde is made by the human body and occurs naturally in the air that we breathe. In fact, metabolic processes break it down to simple carbon dioxide. Plants and animals also produce formaldehyde and the chemical is even emitted as a byproduct of certain vegetables, such as Brussels sprouts and cabbage when they are cooked.

First used as a biological preservative more than a century ago, formaldehyde today is employed in the production of hundreds of beneficial products utilized every day in the home and by industry. Formaldehyde does not accumulate in the environment or within plants, animals or people, as it quickly breaks down in the body and the atmosphere.

Major Sources of Formaldehyde

All organic life forms – bacteria, plants, fish, animals and humans – produce formaldehyde. Humans produce it, inhale it, exhale it and eat it in fruits and vegetables. In fact, the average person processes about 1.5 ounces of formaldehyde each day as part of normal human metabolism. Formaldehyde is normally present in human blood at a low steady-state concentration of approximately 1 to 2 parts-per-million (ppm).

Formaldehyde exists all around us naturally yet breaks down easily in the presence of sunlight to carbon dioxide (CO₂) and water (H₂O). The outdoor air we breathe contains 1 to 68 parts-per-billion of formaldehyde. As a by-product of combustion, formaldehyde is released by burning wood, by cigarettes and other tobacco products, gas cookers and through automobile emissions.

Applications and Benefits of Formaldehyde

Formaldehyde has been routinely used for decades in hundreds of products, ranging from personal hygiene, to medicine, to building products and much more. Many different resins are created from formaldehyde, which are in turn used to create other materials having different properties. Formaldehyde derivatives are used as preservatives in personal hygiene products because they kill bacteria or they are used to make other products more effective in terms of foaming action such as soaps and detergents.

Its versatile chemistry and unique properties have created applications for use of formaldehyde in all kinds of every day products such as plastics, carpeting, clothing, resins, glues, medicines, vaccines and the film used in x-rays.

One of the first benefits you derive from formaldehyde chemistry is as a child, when you received your vaccinations for childhood diseases. These include diphtheria, polio and influenza, to name a few.

Because it also acts as a preservative, formaldehyde plays a critical role in our medical schools, preserving cadavers used in teaching human anatomy. It has been used for tissue and organ preservation for more than a century and has greatly assisted the advance of biological science.

Products made possible by formaldehyde

Formaldehyde is a critical ingredient in the production of hundreds of items that improve everyday life. Common consumer products containing formaldehyde include paper towels, photographic film, shampoo, deodorant, toothpaste, lipstick and nail polish and acts as an anti-bacterial agent in such consumer products as mascara. Among the more common applications of formaldehyde in various product lines are the following:

Medicine, Vaccines and Health Care

The benefits formaldehyde offers for the health care and pharmaceutical industries are numerous. The compound is used in research laboratories throughout the world as a tissue preservative and in processes that identify proteins, DNA and RNA.

It also benefits those in the field of forensics by enhancing their ability to separate complex proteins such as blood and make a positive identification of its source. Formaldehyde also plays a pivotal role in furthering the study of proteins and genes by the pharmaceutical industry. Since the end of the 19th century, formaldehyde has been used in embalming for its preservative and disinfection qualities.

Formaldehyde is used to create the enteric or hard capsules that are used to deliver drugs in the form of pills to millions of people worldwide every day. Anyone suffering from coronary artery disease knows the horrible pain and anxiety that accompanies angina – the suffocating chest pain associated with lack of oxygen to the heart muscle. The nitroglycerin pills placed under the tongue that ease these attacks are made from a formaldehyde derivative. The special pill coatings slow the dissolution of the capsule and promote maximum absorption of the medicine.

Other little known facts -- Formaldehyde played a pivotal role in the defeat of polio by allowing Jonas Salk to pioneer a "killed-virus" vaccine that would immunize without the potential risk of injecting a live virus. Additionally, topical creams, cosmetics and personal hygiene products contain active ingredients that prevent the growth of potentially harmful bacteria. Some of these ingredients are derivatives of formaldehyde.

Furniture, Flooring, Walls, Roofing, Stairs, Cabinets and More

Glues that use formaldehyde as a building block are exceptional bonding agents. For example, formaldehyde-based resins are used to manufacture composite products used extensively in cabinetry, countertops, moldings, furniture, shelving and stair systems, flooring and many other household furnishings. These items are extremely economical due to the superior bonding properties and efficient production of formaldehyde-based glues.

Cars and Trucks

From the front to the rear bumpers, formaldehyde-based materials are key to the manufacture of automobiles, and are used to make components for the transmission, electrical system, engine block, door panels, axles and brake shoes, just to name a few. It's even used in the paint.

Inks

Formaldehyde-based materials are used to produce the dollar bills we spend every day, the documents we print from our computers and the ink used in books, magazines and newspapers.

Wrinkle-Free Clothing

In textiles, formaldehyde-based materials help bind dyes and pigments to fabrics and prevent the colors from running. These materials help improve a fabric's resistance to wrinkles, ease clothing care and maintenance, and allow us to spend more time away from the ironing board.

II. FORMALDEHYDE: EXPOSURE TO THE MOLECULE

The Impact of Exposure

Decades of scientific study have yielded a wealth of knowledge and understanding about the impact of formaldehyde exposure. As a result, there are sufficient government and protective processes in place that, when formaldehyde is handled and used properly, the general public as well as workers are appropriately protected. A recent international review¹ of the scientific literature concluded that the human health effects of formaldehyde are well understood and require no further study. The review also found that exposure is well controlled in occupational settings.

Because humans metabolize formaldehyde quickly, the chemical does not accumulate in the body. Formaldehyde does not accumulate in the environment either, because it is broken down within a few hours by sunlight or by bacteria present in soil or water.

Formaldehyde at higher than normal exposure levels can be irritating to the eyes, nose and throat, but the irritation is temporary and reversible. Formaldehyde exposure has not been demonstrated to cause bronchial asthma. Questions about whether formaldehyde and other chemicals might cause cancer in humans arose in the late 1970s and early 1980s; however, most scientists now believe at environmentally relevant levels, there is essentially no risk of cancer.

Exposure in Manufacturing Settings

Standards² for workplace exposures to formaldehyde are established by the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA). These comprehensive health standards include limits on permissible exposure levels (PELs), requirements for monitoring employee exposures in the workplace, protective measures including engineering controls, medical surveillance, and communication and training about hazards. Manufacturers of formaldehyde are required to comply with all OSHA standards.

¹ UNEP, SIDS Initial Assessment Report for SIAM 14, (2002).

² US Dept. of Labor: Occupational Safety and Health Standards; Z; Toxic and Hazardous Substances. 1910.1048 Formaldehyde:

Permissible Exposure Limit (PEL) -

1910.1048(c) (1) TWA: The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds 0.75 parts formaldehyde per million parts of air (0.75 ppm) as an 8-hour TWA.

1910.1048(c) (2) Short Term Exposure Limit (STEL): The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds two parts formaldehyde per million parts of air (2 ppm) as a 15-minute STEL.

Exposure in Consumer Settings

One of the most important uses of formaldehyde is in adhesives, which benefit from its chemistry and are employed in the production of wood composite products that are extensively used in furniture, kitchen cabinets, counters, and flooring. While very little formaldehyde is present in a form that can be released, small quantities of formaldehyde gas can be emitted from various wood composite products. These low level emissions diminish over time.

The U.S. Department of Housing and Urban Development (HUD) has standards³ that limit formaldehyde emissions from wood. In establishing this standard HUD concluded, “an indoor ambient formaldehyde level of 0.4 ppm provides reasonable protection to manufactured home occupants.” Plywood materials may not emit formaldehyde in excess of 0.2 ppm. Particleboard materials may not emit formaldehyde in excess of 0.3 ppm.

Industry Actions to Reduce Exposure

Industry's commitment to improving technology has resulted in decreasing releases of formaldehyde from a wide variety of products. Manufacturers have voluntarily modified resin formulations and wood product manufacturing techniques to reduce emission levels in the finished product. In 1997 the U.S. Consumer Product Safety Commission (CPSC) concluded that “manufacturers have reduced formaldehyde emissions from pressed wood products by 80-90% from the levels of the 1980's. Formaldehyde is normally present at low levels, usually less than 0.03 ppm in outdoor and indoor air.

Two recent studies have concluded that thermal insulation products manufactured with phenol-formaldehyde resins likely do not result in significant formaldehyde concentrations in buildings. Several industry groups, including the Composite Panel Association and Kitchen Cabinet Manufacturers Association, have established industry certification standards that award seals to products that meet the standards established in their Environmentally Preferable Product and Environmental Stewardship Program respectively.

The voluntary actions of formaldehyde producers and users have achieved significant reductions in formaldehyde emissions as well as advances in exciting new technological advances in low-urea formaldehyde products.

³ US Dept. of Housing and Urban Development. 24 CFR Part 3280
Formaldehyde emission controls for certain wood products.

All plywood and particleboard materials bonded with a resin system or coated with a surface finish containing formaldehyde shall not exceed the following formaldehyde emission levels when installed in manufactured homes: (1) Plywood materials shall not emit formaldehyde in excess of 0.2 parts per million (ppm) as measured by the air chamber test method specified in Sec. 3280.406. (2) Particleboard materials shall not emit formaldehyde in excess of 0.3 ppm as measured by the air chamber test specified in Sec. 3280.406.

III. FORMALDEHYDE SCIENTIFIC RESEARCH

A wealth of scientific understanding exists concerning formaldehyde's potential effects on human health. In fact, the health effects of formaldehyde have been under scientific review for several decades by government agencies worldwide, academic institutions, and industry, making formaldehyde one of the most studied chemicals in use today. Based on the extensive amount of data, there is widespread scientific recognition that when formaldehyde is handled and used properly and in accordance with government and industry guidelines, standards and regulations, consumers and workers are appropriately protected.

A brief overview of some of the existing scientific research on formaldehyde is presented on the following pages.

Irritation

Formaldehyde can be irritating to the eyes, nose and throat, but irritation is temporary and reversible⁴. It is difficult to objectively determine levels at which irritation begins due to the subjective nature of the comparison⁵. The eyes are most sensitive to formaldehyde exposure; the lowest level at which most people can begin to detect formaldehyde is about 0.3 ppm.

In controlled chamber studies, individuals begin to sense eye irritation at about 0.5 ppm; 5 to 20 percent report eye irritation at 0.5 to 1 ppm; and greater certainty for sensory irritation occurred at 1 ppm and above. In these controlled studies, persons not exposed to formaldehyde often reported a 20-30% response rate for eye, nose and throat irritation. Thus, the background rate of response was often higher than the rate in people reporting subjective signs of irritation at low levels of formaldehyde exposure.

An expert panel review⁶ of over 150 published studies found that eye irritation does not become significant until around 1 ppm, and moderate to severe eye, nose, and throat irritation occurs at 2 to 3 ppm.

While some agencies have used a level as low as 0.1 ppm as a threshold for irritation, the expert panel found that a level of 0.3 ppm would protect against nearly all irritation. In fact, the expert panel⁷ found that a level of 1.0 ppm would avoid eye irritation -- the most sensitive endpoint -- in 75-95% of all people exposed.

⁴ Dennis Paustenbach, et al, "Recommended Occupational Exposure Limit for Formaldehyde Based on Irritation," Journal of Toxicology and Environmental Health, (1997).

⁵ Joel Bender, "The Use of Noncancer Endpoints as a Basis for Establishing a Reference Concentration for Formaldehyde," Reg. Toxicology and Pharmacology, (2002).

⁶ UNEP SIDS Initial Assessment Report for SIAM 14, Formaldehyde. (2002).

⁷ See 4.

In any event, normal environmental exposures are below these levels. An Environmental Protection Agency study found a new home measured 0.076 ppm when brand new and 0.045 ppm after 30 days⁸.

Asthma

Formaldehyde exposure has not been demonstrated to cause bronchial asthma. The Agency for Toxic Substances and Disease Registry (ATSDR) states that investigations into this possibility have provided very limited evidence of an association. A report by the National Academy of Sciences (NAS) Institute of Medicine⁹ similarly found inadequate evidence of any association between formaldehyde exposure and asthma induction. Several clinical investigations of asthma cases suspected to be due to formaldehyde failed to confirm even a single case based on inhalation tests. There are also studies indicating that asthmatic individuals are no more sensitive to the irritant effects of formaldehyde than healthy people.^{10 11}

Carcinogenicity Risk

(A) Nasal or Other Respiratory Tract Cancer:

With the discovery in 1979 that formaldehyde caused nasal cancer in laboratory rats following lifetime exposure to very high levels, an extensive effort was undertaken – and continues – to better understand the potential for effects in humans.

The aforementioned NAS report noted that irritation of the eyes and upper respiratory tract is the primary human health effect of concern for setting exposure limits for both short- and long-term inhalation exposures to formaldehyde. The report states¹², “Risk of cancer and other chronic health effects appear to be negligible at concentrations that do not produce chronic irritation and overt target tissue damage.”

⁸ M. Koontz, et al, “Residential Indoor Air Formaldehyde Testing Program: A Pilot Study,” prepared for U.S. EPA, (1996).

⁹ National Academy of Sciences Institute of Medicine, “Clearing the Air: Asthma and Indoor Air Exposures,” National Academies Press, (2000).

¹⁰ Clearing the Air: Asthma and Indoor Air Exposures,” (2000).

¹¹ Joel Bender, “The Use of Noncancer Endpoints as a Basis for Establishing a Reference Concentration for Formaldehyde,” *Regulatory Toxicology and Pharmacology*, 35:1, pp 23-31, (2002).

¹² “Emergency and Continuous Exposure Guidance Levels for Selected Submarine Contaminants,” National Academy of Sciences, (2004).

After more than two decades of research -- making formaldehyde one of the most thoroughly examined chemicals in history -- there is widespread scientific recognition that the effects observed in the respiratory tract, specifically the nose, in laboratory animals at levels of 6 to 15 ppm will not occur in people exposed to much lower levels (such as typical levels of hundredths of a ppm). This is because scientists now have a good understanding of how formaldehyde causes nasal cancer in animals at high levels. At the low levels to which people are exposed, most scientists believe that there is essentially no risk of cancer.

Over the past 25 years, the National Cancer Institute (NCI) has conducted a number of studies on formaldehyde workers to determine if an association exists between exposure to formaldehyde and nasopharyngeal cancer (NPC). The studies involved more than 25,000 workers at 10 plants where occupational exposure to formaldehyde occurred. Of 10 total cases of NPC, six occurred at one of the 10 plants (referred to by epidemiologists as Plant 1) and the other four cases were distributed randomly over the other nine plants. This situation is not the expected pattern from an occupational carcinogen, but rather suggests causes other than formaldehyde exposure at the single plant where most of the cases were observed.

In fact, a separate study of this one plant found no credible association between exposure to formaldehyde and NPC, and the authors suggested some other factor(s) must have been involved.¹³ A 2007 study by researchers at the University of Pittsburgh concluded that the nasopharyngeal cancer mortality excess found at Plant 1 may be due not to formaldehyde exposure, but from other sources.¹⁴

NCI is currently updating their study from 2004 on nasopharyngeal cancer and it is expected to be published in 2008.

(B) Leukemia:

IARC concluded that two studies provided “strong but not sufficient evidence for a causal association between leukemia and occupational exposure to formaldehyde.” One of these studies was also from the NCI and was a companion to the NCI study that reported NPC. However, IARC’s conclusion about leukemia was tempered since they “...could not identify a mechanism for leukaemia (British spelling) induction.” This statement was an important cautionary note since subsequent to IARC’s skepticism, a number of peer-reviewed critical evaluations have concluded that, based on a substantial body of information about chemical-induced leukemia, it is biologically implausible that formaldehyde would be capable of causing this disease.

¹³ G. M. Marsh et al. “Pharyngeal cancer mortality among chemical plant workers exposed to formaldehyde,” *Toxicology & Industrial Health*, 18(6), pp 257-68, (2002).

¹⁴ G. M. Marsh et al. “Work in the metal industry and nasopharyngeal cancer mortality among formaldehyde-exposed workers,” *Regulatory Toxicology and Pharmacology*, 48, 308-319 (2007).

Shortly after the NCI studies were published in 2003 and 2004 in the peer-reviewed *Journal of the National Cancer Institute*, the FCI commissioned two independent reviews by biostatisticians Gary Marsh, Ph.D., and Ada Youk, Ph.D., of the University of Pittsburgh. Their reviews -- one on NPC and the other on leukemia -- were based on a critical reanalysis of the original NCI data. One of these reviews was published in 2004 and the other in 2005 in the peer-reviewed *Journal of Regulatory Toxicology and Pharmacology*¹⁵; they indicate that NCI's findings pertaining to both NPC and leukemia were highly questionable.

Because studies of the type published by NCI are complicated, there can be legitimate grounds for differences of opinion on how the data are interpreted. However, in addition to the two reviews by Marsh and Youk, a number of letters to the editor also have been published and the consistency of the criticisms of the NCI results is noteworthy. NCI is also issuing an updated study on leukemia, which is expected to be published in 2008.

A recently published review¹⁶ of epidemiological data on cancer in workers and professionals exposed to formaldehyde cancer shows no appreciable excess risk for cancer. This study reviewed and pooled the data from all cohort studies through 2007, making it the most comprehensive analysis to date.

(C) Reproductive Toxicity:

Formaldehyde is not considered to have reproductive or developmental effects on humans. A comprehensive review of the scientific literature¹⁷ concluded: "Given formaldehyde's rapid metabolism and reactivity, reproductive and developmental effects appear unlikely from low inhalation and dermal exposure."

¹⁵ "Reevaluation of mortality risks from leukemia in the formaldehyde cohort study of the National Cancer Institute," *Regulatory Toxicology and Pharmacology* 40, pp 113-124 (2004).
"Reevaluation of mortality risks from nasopharyngeal cancer in the formaldehyde cohort study of the National Cancer Institute," *Regulatory Toxicology and Pharmacology*, 42, pp 275-283, (2005).

¹⁶ C Bosetti , J K McLaughlin , R E Tarone , E Pira , C La Vecchia. "Formaldehyde and Cancer Risk: a quantitative review of cohort studies through 2006." *Annals of Oncology*. (2007).

¹⁷ James Collins, et al. "A Review of Adverse Pregnancy Outcomes and Formaldehyde Exposure in Human and Animal Studies," *Regulatory Toxicology and Pharmacology*, 34(1), pp 17-34, (2001).

IV. FORMALDEHYDE'S REGULATORY STATUS

Formaldehyde is an extensively regulated material. Mandatory government regulations set standards to protect human health and the environment. These requirements allow for the safe production, storage, handling and use of this important building block chemical. Levels emitted into indoor air from wood products that contain formaldehyde have decreased dramatically over the past 30 years and now approach normal ambient background levels.

Based on what we know today about formaldehyde toxicity, consumers and workers are appropriately protected when formaldehyde is handled and used in accordance with current government regulations.

International Organizations

IARC

In June 2004, the International Agency for Research on Cancer (IARC) – part of the World Health Organization – classified formaldehyde as “carcinogenic to humans” (Group 1). IARC based its decision primarily on findings from a National Cancer Institute (NCI) study of workers indicating that formaldehyde causes nasopharyngeal cancer (NPC) in humans. As previously indicated, a number of scientists have questioned the basis for the IARC classification.

It is important to understand that IARC judges the scientific evidence based exclusively on the potential hazard posed by a particular chemical, not the expected risk. Risk assessment considers exposure level and dose in combination with hazard. IARC classifications do not cover exposure and dose.

This classification means there is evidence of animal carcinogenicity, but limited evidence in humans. IARC classifications are advisory in nature. Regulatory agencies of individual governments take the classifications into consideration when formulating or implementing regulations.

European Union

European Union member states have varying occupational exposure limits for formaldehyde. A 2006 review indicates that inhalation exposures of less than 1 ppm are protective for the risk of respiratory tract cancer.

Additionally, the latest formaldehyde risk assessment on formaldehyde performed by the German Federal Institute for Risk Assessment has found that 0.1 ppm is a safe indoor air concentration with respect to cancer risk for the general population.

United States Regulatory Agencies

Occupational Safety and Health Administration

The U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) set standards for workplace exposures to formaldehyde. These comprehensive health standards include limits on permissible exposures, requirements for monitoring employee exposures in the workplace, protective measures including engineering controls, medical surveillance and communication and training about hazards.

The legal limit for workplaces covered by Occupational Safety Health Administration (OSHA) is 0.75 ppm averaged over an 8-hour work shift. In addition, 2 ppm should not be exceeded during any 15-minute work period.

Department of Housing and Urban Development

The Department of Housing and Urban Development (HUD) regulates formaldehyde emissions in the indoor air of manufactured housing by limiting formaldehyde emissions from wood products installed in manufactured housing.

The HUD regulations for formaldehyde emissions in manufactured housing were issued in 1985. The following levels and reasoning are contained in the HUD regulation:

Indoor Ambient Formaldehyde Level: 0.4 parts per million (ppm) – In establishing this standard HUD concluded that an indoor ambient formaldehyde level of 0.4 ppm provides reasonable protection to manufactured home occupants, and that there is insufficient medical and scientific evidence to substantiate more than minimal health benefits when formaldehyde levels are reduced below 0.4 ppm.

The HUD rule also set the following standards for formaldehyde emissions from plywood and particleboard materials which are commonly used in the construction of manufactured housing:

Plywood materials may not emit formaldehyde in excess of 0.2 ppm.
Particleboard materials may not emit formaldehyde in excess of 0.3 ppm.

Environmental Protection Agency

In 1991, the U.S. Environmental Protection Agency (EPA) classified formaldehyde as a B1 “probable” carcinogen. This means that studies provide “sufficient” evidence of animal carcinogenicity, but “limited” evidence of human carcinogenicity. The EPA plans to await results from the NCI update before proceeding with a reconsideration of formaldehyde’s cancer classification under its Integrated Risk Information System (IRIS) program.

On June 30, 2004 the EPA promulgated a regulation pertaining to formaldehyde and other emissions from plywood and composite wood products manufacturing facilities. The rule relied on a URE of 5.5×10^{-9} that was derived from the biologically based dose response (BBDR) model developed by the CIIT Centers for Health Research. The URE refers to the lifetime risk per microgram per cubic meter ($\mu\text{g}/\text{m}^3$) of a substance.

Based on this unit risk factor, the benchmark ambient concentration for formaldehyde, a concentration representative of an additional lifetime cancer risk of 1 in 1,000,000 (1×10^{-6}) is 0.149 ppm ($183 \mu\text{g}/\text{m}^3$). The rule was affirmed in part and vacated in part in a 2007 court decision unrelated to EPA's use of this risk estimate.

Consumer Product Safety Commission

Efforts have been made by both the government and industry to reduce exposure to formaldehyde. Since industry voluntarily adopted product emission standards and low-emitting resins were developed, indoor formaldehyde emissions have declined significantly. CPSC determined that independent action was superfluous given the voluntary actions and low levels of formaldehyde.

CPSC has issued "level of concern" guidance on formaldehyde of 0.1 ppm. They provided this "level of concern" in a guidance document for consumers released in 1997.

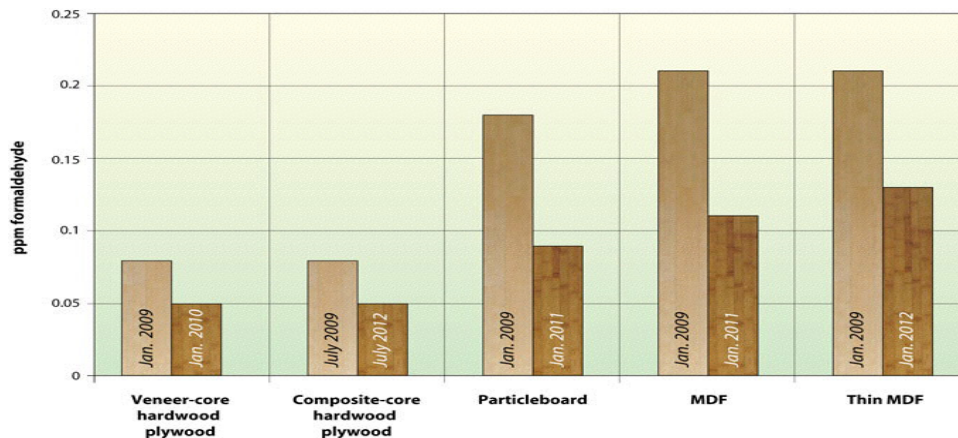
California Air Resources Board

In April of 2007, after more than five years of deliberations, the California Air Resource Board (CARB) adopted the Composite Wood Products Airborne Toxic Control Measure (ATCM) requiring manufacturers to significantly reduce formaldehyde emissions from composite wood products being manufactured or sold in the state of California.

The reductions will be phased in beginning in 2009 and fully implemented by 2012. Initially, the standards would set the allowable levels in line with the European Union E-1 standards for some products, but Phase II would be more stringent.

To ensure compliance, foreign and domestic manufacturers must certify their products by a "third party" lab approved by the ARB and clearly label the items as meeting California's emission requirements. Distributors, contractors, panel manufacturers, and importers will be held responsible for assuring their products comply.

Similar products sold outside of California are exempt.



This chart shows the maximum allowable formaldehyde emissions in the final CARB airborne toxic control measure, based on the ASTM E-1333-96 test protocol
- Greensource.org, 2007

V. FORMALDEHYDE COUNCIL MISSION

The Formaldehyde Council, Inc. (FCI) is a nonprofit trade association representing the leading producers and users of formaldehyde in the United States. FCI members manufacture the majority of the U.S. production volume of formaldehyde.

FCI's mission is to encourage accurate scientific evaluation of formaldehyde and formaldehyde-containing products and to communicate sound scientific information relating to the uses, benefits and sustainability of these products. FCI is committed to advancing the state of scientific understanding on potential toxicology, epidemiology, and environmental effects related to formaldehyde, as well as providing accurate technical and scientific information relating to potential exposures, uses and effects of formaldehyde or formaldehyde-based products.

VI. FCI CONTACT INFORMATION

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