UPDATED INFORMATIVE DIGEST

ADOPTION OF THE AIRBORNE TOXIC CONTROL MEASURE TO REDUCE FORMALDEHYDE EMISSIONS FROM COMPOSITE WOOD PRODUCTS

Sections Affected: Adoption of new sections 93120 to 93120.12, title 17, California Code of Regulations (CCR).

Background: In 1992, the Board identified formaldehyde as a Toxic Air Contaminant (TAC). Formaldehyde was determined to be a human carcinogen with no known safe level of exposure. Following the identification of a substance as a TAC, Health and Safety Code (HSC) section 39665 requires the ARB, with participation of the local air pollution control and air quality management districts (air districts), and in consultation with affected sources and interested parties, to prepare a report on the need and appropriate degree of regulation for that substance. HSC section 39666(b) requires that this "needs assessment" address, among other things, the technological feasibility of airborne toxic control measures (ATCMs) and the availability, suitability, and relative efficacy of substitute products or processes of a less hazardous nature. ARB staff has prepared an Initial Statement of Reasons (ISOR) for an ATCM that serves as the report on the need and appropriate degree of regulation for the ATCM. HSC section 39666 requires the ARB to adopt regulations (e.g., ATCMs) to reduce emissions of the TAC to the lowest level achievable through the application of best available control technology or a more effective control method, in consideration of cost, risk, environmental impacts, and other specified factors.

After the identification of formaldehyde in 1992, the Board promulgated a series of increasingly stringent exhaust emission standards for motor vehicles to limit hydrocarbon emissions, which include formaldehyde. While these actions have reduced formaldehyde emissions from mobile sources, the present ATCM is the first action to specifically reduce formaldehyde emissions from an area source. Of the TACs posing the greatest public health risk to Californians, exposure to formaldehyde in ambient (i.e., outside) air ranks third behind diesel particulate matter and benzene, both highly potent TACs from motor vehicle exhaust.

Presently, ambient formaldehyde concentrations are measured at 17 sites across the state in the Board's Air Toxics Monitoring Network. For the past ten years, statewide average formaldehyde concentrations have ranged from 3.3 to 4.3 micrograms per cubic meter. Exposure to formaldehyde at these concentrations poses both cancer and non-cancer health risks to Californians. In addition, numerous studies indicate that formaldehyde concentrations indoors and inside motor vehicles are often higher than in ambient air, due to emissions occurring in confined spaces with reduced rates of ventilation. For example, in-vehicle and indoor formaldehyde concentrations have been reported to be two to three times

higher and four to ten times higher, respectively, than annual average outdoor formaldehyde concentrations in California.

For composite wood products produced for the California market in 2002, staff estimated the formaldehyde emissions from these products to be about 900 tons. Emissions occur as unbound formaldehyde in the resin used to manufacture composite wood product panels escapes from the panel interior, and as existing chemical bonds in resins degrade over time. These products emit during product distribution to downstream customers, when used by fabricators to build finished goods, and ultimately after being purchased by consumers. While studies indicate that formaldehyde emissions from hardwood plywood, particleboard, and medium density fiberboard are highest in the first few months after manufacture, formaldehyde emissions continue to occur at lower levels for several years thereafter.

Since the majority of the composite wood products sold in California are mainly used for interior applications, the main portion of people's exposure to formaldehyde occurs indoors, where formaldehyde concentrations are four to ten times higher than in outdoor air. Formaldehyde emitted indoors enters the outside air through normal air exchange and outdoor "hotspots" may be created near areas where significant amounts of composite wood products are found. Although formaldehyde emissions from composite wood products constitute less than five percent of estimated annual statewide formaldehyde emissions, these emissions pose a far greater health risk than those directly emitted by all other sources combined.

There are federal regulations governing the allowable formaldehyde emissions from particleboard and hardwood plywood when installed in manufactured homes; these regulations are discussed below in the subsection titled "Comparable Federal Regulations."

Description of the Adopted Regulatory Action: The ATCM adopted by the Board reduces formaldehyde emissions from hardwood plywood, particleboard, and medium density fiberboard, and finished goods containing those materials. This is largely achieved by requiring manufacturers to meet new, stringent formaldehyde emission standards for hardwood plywood, particleboard, and medium density fiberboard panels that are sold, offered for sale, supplied, or manufactured for use in California, and requiring their use in finished goods sold, offered for sale, supplied or manufactured for sale in California.

The ATCM applies not only to manufacturers, but also to distributors, importers, fabricators, and retailers that sell, offer for sale, or supply hardwood plywood, particleboard, and medium density fiberboard panels, or finished goods containing those materials, for use in California. The ATCM does not apply to panels or finished goods that are manufactured or sold for shipment and use

outside of California. The ATCM also does not apply to hardwood plywood and particleboard materials when installed in manufactured homes and subject to regulations promulgated by the United States Department of Housing and Urban Development.

Beginning January 1, 2009, new "Phase 1" formaldehyde emission standards take effect for hardwood plywood, particleboard, and medium density fiberboard. More stringent "Phase 2" emission standards for hardwood plywood, particleboard, and medium density fiberboard are to be phased in between 2010 and 2012. It is anticipated that manufacturers will meet the Phase 1 standards by using resin technologies that are similar to those in use today. To meet the Phase 2 standards, manufacturers will likely use modified current day urea-formaldehyde resin systems, no-added formaldehyde (NAF) or ultra-low-emitting-formaldehyde (ULEF) resin systems.

Manufacturers of composite wood products are required to demonstrate compliance with the new formaldehyde emission standards by being certified by an independent party known as a "third party certifier." Third party certifiers must be approved by ARB and follow specified requirements to verify that a manufacturers' production meets applicable formaldehyde emission standards. Compliance testing flexibility is provided to manufacturers that elect to manufacture panels using either NAF or ULEF resins. Manufacturers would also be required to label their hardwood plywood, particleboard, and medium density fiberboard panels to identify them as meeting either the Phase 1 or Phase 2 emission standards, or as being made with either NAF or ULEF resins. Recordkeeping requirements are also imposed on manufacturers to document that they are complying with applicable regulatory requirements.

Distributors, importers, fabricators, and retailers are required to purchase and sell panels and finished goods that comply with applicable formaldehyde emission standards. They are required to take "reasonable prudent precautions" (such as communicating with their suppliers) to ensure that the products they purchase are in compliance with applicable formaldehyde emission standards. In addition, distributors and importers must keep records showing the date of purchase and the supplier of the product(s), and document what precautions were taken to ensure that the products comply with applicable formaldehyde emission standards. Fabricators are also required to label their finished goods to denote that they comply with applicable Phase 1 or Phase 2 emission standards, if the finished good contains hardwood plywood, particleboard, or medium density fiberboard and will be sold, offered for sale, or supplied for use in California. If the finished good is made exclusively from hardwood plywood, particleboard, or medium density fiberboard made with NAF or ULEF resins, then the finished good must be labeled accordingly.

The ATCM contains "sell-through" provisions that allow non-complying products manufactured before the effective dates of the Phase 1 and Phase 2 emission standards to be sold for certain specified time periods after their effective dates.

Differing sell-through periods apply depending on whether the product is sold by a manufacturer, distributor, importer, fabricator, or retailer.

Finally, the ATCM specifies test methods for determining whether panels and finished goods meet applicable emission standards.

Additional Adopted Amendments

The ATCM adopted by the Board includes modifications to the original proposal set forth in the Initial Statement of Reasons released on March 9, 2007. These modification are described below.

Compliance testing flexibility for ULEF resins has been added. The originally proposed ATCM was revised so that manufacturers of composite wood products with ULEF resins that can demonstrate consistent average emissions below the Phase 2 standards will not be required to conduct emission tests of their products as frequently as otherwise required, or may qualify for an exemption from third party certification. The ATCM was also modified to clarify labeling and testing requirements associated with ULEF resin use.

Producers of architectural plywood and fabricators that apply a laminate to a composite wood product are now considered as fabricators of “laminated products.” These fabricators only need to verify that they use a complying core or platform. A definition for “laminated products” has also been added.

The definition of “composite wood products” was modified to clarify which products do not fall under the definition of “composite wood products” and to include “composite wood products” used inside of new recreational vehicles.

The Phase 2 implementation date for hardwood plywood with a veneer core (HWPW-VC) was changed from January 1, 2011 to January 1, 2010. The sell-through dates were modified to be consistent with this change.

Specificity was added to the provisions for manufacturers of composite wood products that use NAF resins, including emissions performance criteria, how to qualify for an exemption from third party certification, and information required to apply for approval to use such resins.

Additional recordkeeping requirements were also added for manufacturers that use NAF resins or ULEF resins.

In a separate provision of the ATCM, criteria were added to allow third party certifiers to re-apply to maintain their status as an approved certifier.

Exemptions were added for local governments and school districts; and for water resistant exterior doors and garage doors that contain composite wood products. Requirements were clarified for fabricators that manufacture composite wood products for use by the fabricator in making finished goods, such as a hardwood flooring company.

Additional language was added to allow the use of a secondary test method by third party certifiers in developing correlations with quality control test methods used by composite wood product manufacturers. Also, the section was modified to allow ARB to use the secondary test method for enforcement purposes.

In the sell-through provisions, the dates were changed for manufacturers of raw boards from one month to three months, for importers of raw boards from five months to three months, and for fabricators of finished goods from twelve months to eighteen months.

In addition to the modifications described above, various modifications to the regulatory text have been made to add specificity and flexibility, and to improve overall clarity.

Comparable Federal Regulations: The United States Department of Housing and Urban Development (HUD) promulgated formaldehyde emission limits for particleboard and plywood installed in manufactured homes used as dwellings (24 Code of Federal Regulations, section 3280.1 et seq., 3280.308). Federal law generally preempts State and local regulations regarding construction and safety standards for manufactured homes, such as the formaldehyde emission standards specified in the HUD regulations (see 42 U.S. Code Annotated section 94503(d)). To comply with federal law, the ATCM exempts products covered by the HUD regulation. The HUD regulation does not apply to plywood and particleboard used in applications other than for manufactured homes, nor finished goods made with those materials.

The United States Environmental Protection Agency also promulgated a National Emission Standard for Hazardous Air Pollutants (NESHAP): Plywood and Composite Wood Products, which imposes emission limits on plywood and composite wood product manufacturing facilities (Title 40, Code of Federal Regulations, Chapter I, Subchapter C, Part 63, Subpart DDDD; section 63.2230 et seq.). This NESHAP applies to emissions of hazardous air pollutants from manufacturing facilities, and not emissions from composite wood products covered by the ATCM.