UPDATED INFORMATIVE DIGEST

ADOPTION OF PROPOSED AMENDMENTS TO THE HEXAVALENT CHROMIUM AIRBORNE TOXIC CONTROL MEASURE FOR CHROME PLATING AND CHROMIC ACID ANODIZING OPERATIONS

Sections Affected: Adoption of amendments to section 93102, title 17, California Code of Regulations (CCR), and adoption of new sections 93102.1 to 93102.16, title 17, CCR.

Background: In 1986, the Board identified hexavalent chromium as a Toxic Air Contaminant (TAC). Hexavalent chromium was determined to be an extremely potent human carcinogen with no known safe level of exposure. It was found that exposure over a lifetime to very low hexavalent chromium concentrations could very substantially increase a person's chance of developing cancer. Subsequent to that finding and to control hexavalent chromium emissions, the Board adopted the Chromium Plating ATCM (title 17, CCR, section 93102). The regulation set forth the requirements for reducing hexavalent chromium emissions based on the type of operation. Most hard chromium plating facilities were required to reduce hexavalent chromium emissions by 99 percent or more. This was achieved through installation of add-on air pollution control devices. Decorative chromium plating and chromic acid anodizing facilities were required to reduce emissions by 95 percent, however, they were not required to use add-on air pollution control devices.

The Chromium Plating ATCM was amended in 1998 to include provisions for controlling emissions of trivalent chromium from trivalent chromium plating facilities. The 1998 amendments also added requirements for monitoring, inspection, maintenance, recordkeeping, and reporting. These amendments were necessary to establish equivalency with the federal regulation for chromium plating and chromic acid anodizing facilities.

Because hexavalent chromium is a potent human carcinogen, and in response to community concerns, ARB staff re-evaluated the Chromium Plating ATCM. The goal of the re-evaluation was to determine if people living near chromium plating or chromic acid anodizing facilities are adequately protected from hexavalent chromium emissions, and if control technologies are available to further reduce these emissions. It was found that 43 percent of the hexavalent chromium operations are located within 100 meters of a sensitive receptor, such as a residence or school. These sensitive receptors may be exposed to unacceptable hexavalent chromium concentrations, as was demonstrated by an emissions testing program and by air quality modeling. Reliable add-on air pollution control devices, such as high efficiency particulate arrestor (HEPA) filters are available and are currently being used by many facilities to reduce hexavalent chromium emissions. Use of HEPA filters, or other combinations of controls that are as effective as HEPA filters, represents best available control technology (BACT) for

intermediate and large production facilities. BACT for small facilities is represented by use of ARB specified chemical fume suppressants.

Several facilities in California currently use the trivalent chromium process to perform decorative chromium plating. Therefore, staff also evaluated if using this alternative process could be employed for all decorative chromium plating operations. Trivalent chromium is not considered to be a human carcinogen. If feasible, use of the trivalent chromium process would potentially eliminate the cancer risk from decorative chromium plating operations. However, although improvements in the process have been made, use of trivalent chromium is not available for all applications.

The overall conclusion of the re-evaluation was that cancer risk in the community from intermediate and large production facilities, now controlled with chemical fume suppressants alone, could be reduced very substantially by requiring the use of HEPA filter systems, or the equivalent. By applying this approach to all but very small sources, an additional 40 percent of facilities would be able to control their emissions of hexavalent chromium by over 99 percent.

Staff also concluded that the hexavalent chromium emissions from chromium plating and chromic acid anodizing are not solely from electroplating or anodizing, but also from fugitive dust that is reintroduced into outside air. Implementing housekeeping measures to reduce dust accumulation can reduce these fugitive emissions.

As allowed by State law, in 2003 the South Coast Air Quality Management District (South Coast AQMD) amended its Rule 1469, Control of Hexavalent Chromium Emissions from Chrome Plating and Chromic Acid Anodizing Operations (Rule 1469), and made the rule more protective than the then applicable ATCM. The amended rule requires hexavalent chromium facilities located within 25 meters from a sensitive receptor or within 100 meters from a school to reduce hexavalent chromium emissions such that the residential cancer risk is no more than ten chances per million people. The rule also requires facilities located greater than 25 meters from a sensitive receptor or 100 meters from a school to reduce emissions such that cancer risk is no more than 25 chances per million people. Rule 1469 establishes production thresholds that allow the use of chemical fume suppressants added to the plating bath as the sole control method (as is currently allowed by the Chromium Plating ATCM). The only chemical fume suppressants that can be used are those that are ‘certified’ to reduce hexavalent chromium emissions from the plating bath to no more than 0.01 milligrams per ampere-hour at specified surface tensions. Rule 1469 also establishes housekeeping requirements. The amended rule is in full effect.

There are also federal regulations for chromium plating and chromic acid anodizing facilities; these regulations are discussed below under the heading “Comparable Federal Regulations.”

Description of the Adopted Regulatory Action:

The originally proposed amendments were considered at the Board's September 28, 2006 hearing. After consideration of the testimony and comments received, the Board continued the hearing until December 7, 2006, and subsequently adopted the amendments described below:

The adopted amendments to the Chromium Plating ATCM require use of more stringent add-on air pollution control devices such as HEPA filters or equivalent systems. This add-on air pollution control equipment requirement applies to facilities over time, except for facilities with very low throughput (measured in annual permitted ampere-hours), that are required to use specific chemical fume suppressants.

The existing Chromium Plating ATCM established different control requirements based on the type of operation, with hard chromium plating operations subject to the most stringent limits. Rather than continued bifurcation of requirements, the adopted amendments require all facilities using the hexavalent chromium process, whether they perform decorative plating, hard plating, or chromic acid anodizing, to comply with the same requirements.

The adopted amendments specify that all existing facilities using the hexavalent chromium process with a sensitive receptor located within 330 feet and with more than 20,000 annual ampere-hours meet an emission rate of 0.0015 milligrams per ampere-hour using an add-on air pollution control device. Those facilities with less than or equal to 20,000 annual ampere-hours, with a sensitive receptor located within 330 feet, are allowed to comply using specified chemical fume suppressants.

The adopted amendments provide less stringent requirements for facilities using the hexavalent chromium process with no nearby sensitive receptor. Facilities with no sensitive receptor within 330 feet and with more than 50,000 annual ampere-hours, but less than 500,000 annual ampere-hours are required to meet an emission rate of 0.0015 milligrams per ampere-hour. Flexibility is provided to demonstrate meeting this emission rate without using an add-on air pollution control device. However, facilities with no sensitive receptor located within 330 feet and with more than 500,000 annual ampere-hours are required to meet an emission rate of 0.0015 milligrams per ampere-hour using an add-on air pollution control device. Those facilities with less than or equal to 50,000 annual ampere-hours, with no sensitive receptor located within 330 feet, are allowed to comply using specified chemical fume suppressants.

The adopted amendments also contain flexibility requirements for all facilities as provided in Health and Safety Code section 39666(f). Any facility can apply to the local air district for approval of an alternative method of compliance. The alternative method must demonstrate an equivalent, or greater, emission and risk reduction than would be achieved through direct compliance. The alternative method must also be enforceable.

Under the adopted amendments, a facility is defined as "modified" if annual operating hours increase to a level where the facility is subject to a more stringent emission

limitation. Modified facilities are required to demonstrate compliance with the emission limitation of 0.0015 milligrams per ampere-hour by using an add-on air pollution control device(s).

The adopted amendments prohibit new facilities from operating unless they are located outside of an area that is zoned for residential or mixed use and are located at least 1,000 feet from the boundary of any area zoned for residential or mixed use, or 1,000 feet from a school or a school under construction. All new facilities are also required to install HEPA add-on air pollution control device(s) and comply with an emission limitation of 0.0011 milligrams per ampere-hour.

The adopted amendments will further reduce the statewide emissions of hexavalent chromium from chromium plating and anodizing facilities by over 50 percent. Facilities required to install add-on control devices (such as HEPA filtration systems), and those demonstrating compliance through an alternative (as allowed by Health and Safety Code section 39666(f)) will control emissions by over 99 percent. This will result in a reduction in estimated cancer risk of up to 85 percent for individual facilities.

Additional Adopted Amendments

1. A number of new and modified definitions were adopted to implement the new requirements and clarify existing definitions. In particular, a definition was adopted to define "sensitive receptor" as: "any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing."

2. The adopted amendments specify the chemical fume suppressants that can be used by very small facilities to comply with the surface tension requirement. Provisions were also adopted to require use of the specified chemical fume suppressants six months after the effective date for existing facilities using chemical fume suppressants as sole control.

3. Housekeeping measures were adopted to reduce fugitive hexavalent chromium emissions.

4. Training on the Chromium Plating ATCM and the requirements, conducted by ARB staff, is required for employees of chromium plating and chromic acid anodizing facilities every two years. This requirement does not apply to personnel who attend the South Coast AQMD's training class for Rule 1469. Personnel that have completed the training must be onsite during plating and/or anodizing operations.

5. As described below, under “Comparable Federal Regulations,” the federal regulation was recently amended. The adopted amendments incorporate most of these changes into the Chromium Plating ATCM except the provision that allows all hard chromium plating facilities to use chemical fume suppressants as the sole source of controlling hexavalent chromium emissions. In the adopted amendments to the ATCM, facilities located within 330 feet of a sensitive receptor can only use chemical fume suppressants as sole control if their annual production is less than 20,000 annual ampere-hours. Facilities with no sensitive receptor located within 330 feet, can use chemical fume suppressants as sole control if their annual ampere-hours are less than 50,000.

6. An amendment was also adopted that applies to chromium plating and chromic acid anodizing kits. The amendments prohibit the sale, supply, offering for sale, or manufacture for sale in California, of any chromium plating or chromic acid anodizing kits. The use of these kits to perform chromium electroplating or chromic acid anodizing is also prohibited unless these activities are performed at a facility with a permit to operate that complies with the requirements of the Chromium Plating ATCM.

7. New facilities are required to conduct a site specific health risk analysis. Modified and some existing facilities are required to conduct a site specific health risk analysis if annual hexavalent chromium emissions exceed 15 grams.

8. Table 93102.14 of section 93102.14 was amended to remove the United States Environmental Protection Agency (U.S. EPA) as the concurring agency on approval of several alternatives. The table was further modified to clarify that U.S. EPA is to be the concurring agency for “Major” changes only. Definitions were added following the table to define what is considered to be a “Major” change as well as what are “Minor” and “Intermediate” changes.

9. Appendix 9 was adopted to specify the types of information to be submitted to the permitting agency when applying for an alternative compliance option.

10. A number of minor or nonsubstantive changes were adopted to re-number and re-organize subsections within the Chromium Plating ATCM. For example, the previous ATCM was contained in a single section (section 93102) but the adopted Chromium Plating ATCM is contained in sections 93102-93102.16. These changes were necessary to accommodate the new provisions and provide clarity.

Comparable Federal Regulations

On January 25, 1995, the U.S. EPA promulgated, in 40 Code of Federal Regulations (CFR) Part 63, Subpart N, “The National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks”

(Chromium Plating NESHAP). On July 19, 2004, U.S. EPA amended the Chromium Plating NESHAP.
The federal amendments allow the use of chemical fume suppressants as the sole method to control chromium emissions from hard chromium plating facilities as an alternative to the existing concentration emission limit. Among other provisions the amended Chromium Plating NESHAP also established an alternative standard for hard chromium plating tanks equipped with enclosed hoods and modified the surface tension parameter testing to accommodate the margin of error between the use of a stalagmometer or tensiometer.

On March 15, 1999, ARB was granted equivalency to the 1995 Chromium Plating NESHAP under section 112(l) of the federal Clean Air Act (See 64 Federal Register (FR) 12762, March 15, 1999; 40 CFR section 63.99). This approval by U.S. EPA means that chromium plating and chromic acid anodizing facilities in California do not need to comply with the federal Chromium Plating NESHAP. Instead, these facilities must comply with California's Chromium Plating ATCM, in lieu of the federal Chromium Plating NESHAP. The requirements of the amended Chromium Plating ATCM are at least as stringent, or more stringent, than the amended Chromium Plating NESHAP.

Under the U.S. Department of Labor, the Occupational Health & Safety Administration (OSHA) published a Permissible Exposure Limit (PEL) to protect workers from hexavalent chromium exposures. On February 28, 2006, OSHA approved changes to the hexavalent chromium rule to establish a time-weighted average PEL of 5 micrograms per meter cubed ($\mu g/m^3$), measured and reported as hexavalent chromium (see 71 FR 10100). OSHA also adopted other ancillary provisions for employee protection such as preferred methods for controlling exposure, respiratory protection, protective work clothing and equipment, housekeeping measures, hygiene areas and practices, medical surveillance, hazard communication, and recordkeeping. The OSHA's PEL for chromic acid and chromates is found in 29 CFR 1910.1000, Table Z-2.

The Board also adopted housekeeping measures in the Chromium Plating ATCM. The housekeeping measures are designed to prevent dust that may contain hexavalent chromium from becoming re-entrained into the ambient air. The OSHA measures are designed to protect workers. The measures adopted by ARB do not conflict with those required by OSHA to protect workers.