California Environmental Protection Agency

Air Resources Board

Final Statement of Reasons for Rulemaking

Including Summary of Comments and Agency Responses

PUBLIC HEARING TO CONSIDER
THE PROPOSED AIRBORNE TOXIC CONTROL MEASURE TO REDUCE EMISSIONS OF HEXAVALENT CHROMIUM AND NICKEL FROM THERMAL SPRAYING

Public Hearing Date: December 9, 2004
Agenda Item No.: 04-11-3

TABLE OF CONTENTS

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I. GENERAL

On December 9, 2004, the Air Resources Board (ARB or Board) conducted a public hearing to consider an Airborne Toxic Control Measure (ATCM) to Reduce Emissions of Hexavalent Chromium and Nickel from Thermal Spraying: contained in new section 93102.5, title 17, California Code of Regulations (CCR). The ATCM will require the use of best available control technology (BACT) when conducting thermal spraying operations that use materials containing chromium or nickel. The Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Airborne Toxic Control Measure to Reduce Emissions of Hexavalent Chromium and Nickel from Thermal Spraying, released to the public on October 22, 2004 (staff report), is incorporated by reference herein. At the December 9, 2004, hearing, the Board approved the proposed ATCM with various modifications. The modifications made to the ATCM were made available for public comment from March 18, 2005, to April 4, 2005. To be consistent with the terminology customarily used for rulemaking actions, the FSOR will refer to this comment period as the "15-day comment period" even though a total of 17 days was actually allowed for public comment. This Final Statement of Reasons for Rulemaking (FSOR) updates the staff report by identifying and explaining the modifications that were made to the original proposal. The FSOR also summarizes the written and oral comments received during the 45-day comment period preceding the December 9, 2004, public hearing and at the hearing itself, and contains the ARB's responses to those comments. No comments were received during the 15-day comment period.

The ARB has determined that this regulatory action will not create costs or savings, as defined in Government Code sections 11346.5(a)(5) and 11346.5(a)(6), to any state agency or in federal funding to the state, costs or mandate to any school district whether or not reimbursable by the state pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, or other nondiscretionary savings to State or local agencies.

This regulatory action will impose a mandate upon and create costs to some local government agencies. One local agency that performs thermal spraying (the Eastern Municipal Water District in Riverside) will be minimally impacted because it will incur

costs of approximately $600 per year to conduct monitoring, recordkeeping, and reporting. These costs are not state mandated costs that are required to be reimbursed pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code and section 6 of article XIII B of the California Constitution, because the proposed regulations apply generally to all thermal spraying operations in the State and do not impose unique requirements on local government agencies.

This regulatory action will also impose a mandate upon and create costs to local air pollution control and air quality management districts (the "districts"). However, these costs to the districts are recoverable by fees that are within the districts' authority to assess (see Health and Safety Code sections 42311 and 40510). Therefore, this regulatory action imposes no costs on local agencies that are required to be reimbursed by the State pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, and does not impose a mandate on local agencies that is required to be reimbursed pursuant to Section 6 of Article XIII B of the California Constitution.

The following documents and test methods are incorporated by reference in the ATCM:

ATCM Section	**Document Incorporated by Reference**
(c)(1)(B) 2.b.	"Industrial Ventilation, A Manual of Recommended Practice", 25th Edition, published by the American Conference of Governmental Industrial Hygienists
(d)(2)(A)	ASHRAE Standard 52.2-1999, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1791 Tullie Circle NE, Atlanta, GA 30329. 1999.
(d)(2)(B)	MIL-PRF-51526A(EA), "Filter, Particulate, 340 CMH (200 CFM), 13 March 2000, U.S. Army.
(d)(2)(C)	ASME AG-1-2003, "Code on Nuclear Air and Gas Treatment", American Society of Mechanical Engineers, 345 E. 47th St., New York, NY 10017. 2003.
(d)(2)(D)	IEST-RP-CC001.3, "HEPA and ULPA Filters", Institute of Environmental Sciences and Technology, 5005 Newport Drive, Suite 506, Rolling Meadows, IL 60008-3841. 1993.
(d)(3)(B) 1.	ARB Test Method 425, "Determination of Total Chromium and Hexavalent Chromium Emissions from Stationary Sources", last amended July 28, 1997, section 94135, title 17, California Code of Regulations (CCR).
(d)(3)(B) 1.	EPA Test Method 306, "Determination of Chromium Emissions From Decorative and Hard Chromium Electroplating and Chromium Anodizing Operations – Isokinetic Method", 40 CFR 63, Appendix A, as promulgated on January 25, 1995.
(d)(3)(B) 1.	South Coast Air Quality Management District (SCAQMD) Test Method 205.1, "Determination of Hexavalent and Total Chromium from Plating", August 1991.
(d)(3)(B) 2.	ARB Test Method 433, "Determination of Total Nickel Emissions from Stationary Sources", last amended September 12, 1989, section 94145, title 17, California Code of Regulations (CCR).
(d)(3)(B) 2.	ARB Test Method 436, "Determination of Multiple Metals Emissions from Stationary Sources" (for nickel only), adopted July 28, 1997, section 94161, title 17, California Code of Regulations (CCR).

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the CCR. The documents are lengthy, very technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the CCR is not needed because the interested audience for these documents is quite small (i.e., facilities that use chromium, chromium compounds, nickel, or nickel compounds in thermal spraying operations). The incorporated documents were available during the rulemaking action upon request from the ARB and will continue to be available from the ARB in the future. The documents are also available from commonly known sources such as college and public libraries, or may be purchased directly from the publishers.

The ARB has determined that no reasonable alternative considered by the agency or that has otherwise been identified and brought to the attention of the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons or businesses, than the action taken by the ARB.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

Various modifications to the original proposal were made to address comments received during the 45-day public comment period, and to clarify the regulatory language. These modifications are described below. A "Notice of Public Availability of Modified Text," together with a copy of the modified sections of the Thermal Spraying ATCM, was mailed on March 18, 2005, to each of the individuals described in subsections (a)(1) through (a)(4) of section 44, Title 1, CCR, including all people who submitted written or oral comments. Additionally, this notice was made available on ARB's website on the same date. By these actions, the modified Thermal Spraying ATCM was made available to the public for a supplemental comment period from March 18, 2005, to April 4, 2005, pursuant to Government Code section 11346.8. No comments were received during this supplemental comment period. After the close of the 15-day comment period, the Board's Executive Officer determined that no additional modifications should be made to the Thermal Spraying ATCM. The Executive Officer subsequently issued Executive Order R-05-002, which adopted the proposed Thermal Spraying ATCM.

Following is a summary of the modifications that were made to the original proposal.

Definitions (subsection (b))

The definition for "inward face velocity" was modified to read "…airflow into an enclosure that prevents escape of contaminated air from the enclosure. Inward face velocity is measured in feet per minute, in accordance with Appendix 2." This change was made to clarify the definition and remove a reference to the measurement of airflow in cubic feet per minute.

The definition for "new thermal spraying operation" was revised to read "…any thermal spraying operation that begins initial operations on or after January 1, 2005. 'New Thermal Spraying Operation' does not include the installation of a new permit unit at an existing thermal spraying operation or the modification of an existing thermal spraying operation." This change was made to clarify that modified operations are not subject to the standards for new thermal spraying operations.

A new definition was added for "Substantial Use" as it relates to an authority to construct. If someone obtains an authority to construct for a new thermal spraying operation, there are certain types of activities that qualify as "substantial use" of the authority to construct (e.g., purchase of equipment, construction of buildings, etc.) This new definition explains the types of actions that qualify as "substantial use."

Enclosure Standards (subsection (c)(1)(B))

This subsection was modified to allow enclosures to be opened briefly, while thermal spraying is being conducted, for the purposes of equipment calibration and research and development activities only. Otherwise, enclosures must remain closed while spraying is being conducted. This option is only available for enclosures that have four sides, a permanent door, and are under negative pressure, as demonstrated by pressure and/or flow measurements. In addition, thermal spraying operations that are allowed this option must obtain approval from the permitting agency. These modifications ensure that equipment calibration and research and development activities can be conducted, while also ensuring that public health will be protected during these activities.

Standards for New Thermal Spraying Operations (subsection (c)(3)(A))

This subsection was modified to clarify when new thermal spraying operations would not be affected by zoning changes that occur after they receive an authority to construct from a permitting agency. The subsection was revised to read -

"No person may operate a new thermal spraying operation unless it is located outside of an area that is zoned for residential or mixed use and is located at least 500 feet from the boundary of any area that is zoned for residential or mixed use.

2. A new thermal spraying operation shall be deemed to meet the standard specified above in subsection (e)(3)(A)1. if one of the following criteria are met, even if the operation does not meet the standard at the time of initial startup (e.g., because of a zoning change that occurs after the authority to construct is issued):

a. A new thermal spraying operation shall be deemed to meet the standard specified above if it meets the standard at the time it is issued an authority to

construct by the permitting agency, and substantial use of the authority to construct takes place within one year after it is issued, or

b. A new thermal spraying operation shall be deemed to meet the standard specified above if it meets the standard at the time it is issued an authority to construct by the permitting agency, and substantial use of the authority to construct takes place before any zoning change occurs that affects the operation's ability to meet the standard at the time of initial start-up.

3. Prior to initial startup of a new thermal spraying operation, the owner or operator must demonstrate to the permitting agency that the operation either meets the standard specified above in subsection (e)(3)(A)1., or meets one of the criteria specified above in subsection (e)(3)(A)2."

The rationale for this modification can be found in the response to Comment #5.7.

Test Requirements and Test Methods (subsections (d)(1)(C) and (d)(3)(B))

Subsection (d)(1)(C) was modified to add test methods for the verification of negative pressure while the enclosure door is open. This test method is necessary for those operators that obtain approval to open the enclosure door while thermal spraying is being conducted, for the purposes of calibration or research and development.

Subsection (d)(3)(B) was modified to add the phrase "which are incorporated by reference herein" to clarify that the listed test methods are incorporated by reference. This is a nonsubstantial clarification.

Monitoring, Inspection, and Maintenance Requirements (subsections (e)(1), (e)(2), (e)(4) and (e)(5))

Table 3(A) was modified to reduce the frequency of the pressure drop readings from once per shift to once per week.

Subsection (e)(2) was modified to delete the requirement that dry filter alarm systems be triggered during the cleaning cycle when the high set point is exceeded.

Table 4(C) has been modified to read "Measure inward face velocity at each opening in accordance with Appendix 2. This requirement does not apply to existing thermal spraying operations that are remotely located and comply with the standards in section (c)(1)(E)." In addition, the measurement frequency was modified to read "At least once per calendar year and whenever the air pollution control system is changed in any way that may impact air flow." These modifications were made to provide clarification for remotely located operations and reduce the monitoring frequency in response to public comments (see the agency response to Comment #4.7.)

Subsection (e)(5) was added to incorporate monitoring requirements for demonstrating that negative pressure is maintained while the enclosure door is open. This test method is necessary for those operators that obtain approval to open the enclosure door while thermal spraying is being conducted, for the purposes of calibration or research and development.

Recordkeeping Requirements (subsection (f)(5))

This subsection was modified to clarify that the requirement to maintain records for malfunctions only applies to malfunctions that cause or may cause uncontrolled emissions to be released.

Reporting Requirements (subsections (g)(3) and (g)(4))

Subsection (g)(3) was modified to add the phrase "If the use of these materials begins before the operative date of this section, this notification may be delayed until the operative date of this section." This modification was made to account for the fact that some operations may begin using materials containing chromium or nickel prior to the date that the Thermal Spraying ATCM becomes legally operative and published in the California Code of Regulations.

Subsection (g)(4) was modified to clarify that the reporting requirement for malfunctions only applies to malfunctions that cause or may cause uncontrolled emissions to be released.

Appendix 1 – Emission Calculation Method

Step 5 was revised to read "…If a material is used for multiple thermal spraying operations and material usage records document the quantity of material used for each operation, use the applicable emission factors for each operation. If material usage records do not document the quantity of material used for each operation, use the highest emission factor." This modification was made to clarify that a facility operator is only required to use the highest emission factor if it is not possible to properly account for the material usage associated with each thermal spraying process.

Step 6 was modified to clarify that the emission factor is in units of [lbs Cr^{+6}/lb Cr sprayed] and usage is in units of [lbs Cr sprayed/yr]. This is a nonsubstantial clarification.

In the Example Calculations, Step 1, the phrases "chromium compounds" and "nickel compounds" were added. This is a nonsubstantial clarification.

Appendix 2 – Method for Measuring Inward Face Velocity

The first paragraph was revised to read "Inward face velocity must be measured at least once every calendar year and whenever the air pollution control system is changed in

any way that may impact air flow to ensure that the ventilation system is working properly." This modification was made to reduce the frequency of required measurements.

The section for "Walk-In Booth Measurement" was modified to delete the sentence "Empty the walk-in booth prior to the airflow distribution measurement." This modification was made to clarify that it was not necessary to remove robotic equipment and other fixtures from the booth prior to measurement.

III. SUMMARY OF COMMENTS AND AGENCY RESPONSES

The Board received written and oral comments during the 45-day comment period and at the December 9, 2004, hearing for this regulatory action. No comments were received during the 15-day comment period for this regulatory action. A list of commenters is set forth below, identifying the date received and form of all comments that were timely submitted. Following the list is a summary of each objection or recommendation made regarding the proposed action, together with an explanation of how the proposed action has been changed to accommodate the objection or recommendation, or the reasons for making no change.

	Abbreviation	**Commenter**
1.	BFK	Barbara Kanegsberg, BFK Solutions, LLC Consultant for Plasma Technology, Inc. Oral testimony: December 9, 2004
2.	CAPCOA	Harry Krug, President California Air Pollution Control Officers Association Written testimony: November 17, 2004
3.	CCA	Celeste Draisner Citizens for Clean Air Written testimony: December 7, 2004
4.	CCAT	Jane Williams, Executive Director California Communities Against Toxics Oral testimony: December 9, 2004
5.	CCAEJ CBE EHC SVTC	Penny Newman, Executive Director Center for Community Action and Environmental Justice Bahram Fazeli, Acting Southern California Program Director Communities for a Better Environment Diane Takvorian, Executive Director Environmental Health Coalition Rina Mehta, Project Director - Health and Environmental Justice Silicon Valley Toxics Coalition Written testimony: December 8, 2004
6.	EHC	Diane Takvorian, Executive Director Environmental Health Coalition Oral testimony: December 9, 2004

	Abbreviation	Commenter
7.	GKN	Ronald Bott GKN Aerospace Chem-tronics Inc. Written testimony: December 8, 2004
8.	IEA-1	Clay Hinkle Industrial Environmental Association Oral testimony: December 9, 2004
9.	IEA-2	Patti Krebs, Executive Director Industrial Environmental Association Written testimony: December 8, 2004
10.	ITSA	John Read, Chairman International Thermal Spray Association Written testimony: November 29, 2004
11.	PTI-1	Robert Dowell, President Plasma Technology, Inc. Written testimony: November 29, 2004
12.	PTI-2	Steve Norris, Production Supervisor Plasma Technology, Inc. Oral testimony: December 9, 2004
13.	SCAQMD	Susan Nakamura, Planning and Rules Manager South Coast Air Quality Management District Written testimony: December 8, 2004
14.	SDAPCD	Michael Lake, Assistant Director San Diego County Air Pollution Control District Written testimony: December 1, 2004
15.	STI	Craig Anderson, Manager, Environmental, Health and Safety Solar Turbines Inc. Written testimony: December 7, 2004
16.	UA	David Weintraub, Senior Staff Representative United Airlines Written testimony: November 15, 2004
17.	UCD	Darryl Mack, Associate Development Engineer University of California, Davis Oral testimony: December 9, 2004
18.	UNMACK	James Unmack, Unmack Corp. Consultant for Plasma Technology, Inc. Oral testimony: December 9, 2004

Comments and Responses

1.0 Applicability

1.1 Comment: "Portable units should be included in this ATCM. Portable thermal spray units must be included in this or a future ATCM. Even if only used in a location for 30 days, these units can also pose acute health risks to nearby sensitive receptors. These health impacts must be analyzed and eliminated. Absent inclusion of these units in this regulation or a future ATCM, companies that conduct relatively little thermal spraying, like job shops, will be incentivized to take their thermal spray operations off-site, rather than installing controls at their permanent location. In that event, these types of sources could be much harder to locate and regulate than they are now." (CCAEJ, CBE, EHC, SVTC)

Agency Response: Portable thermal spraying operations are not being regulated at this time because staff believes additional investigation is needed. More information is necessary to determine what actions are appropriate. The Board has directed staff to investigate portable thermal spraying operations to identify potential health risks and determine if regulation is warranted.

1.2 Comment: "'*This ATCM does not apply to portable thermal spraying operations*' should be deleted. The basic reasons for proposing this ATCM is to Reduce Emissions of Hexavalent Chromium and Nickel from Thermal Spraying. According to the Emission Calculation Method, emissions from an uncontrolled portable operation could exceed that of a permanent HEPA controlled facility using the same materials by over 3000 times during a 30 day period. The entire benefit of adopting this ATCM could be negated by not including the portable units." (GKN)

Agency Response: This comment is addressed in the response for Comment #1.1.

1.3 Comment: "The District would have preferred that portable thermal spraying operations (those that remain at the same location for less than 30 days) be included in this ATCM. Even though these units operate for less than 30 days, they may pose a high risk of adverse health impacts to nearby residents if they are spraying chromium or nickel. The District understands from discussions with ARB staff that they were not included in the current proposal because ARB did not have any information indicating emissions of chromium or nickel from portable operations in California. However, although it appears that most portable spraying operations do not involve chromium or nickel, discussions by District staff with a local thermal spraying facility, which also does portable thermal spraying, indicates that some portable thermal spraying in California does involve chromium and nickel, including some operations by out-of-state contractors. The District strongly encourages ARB to develop an air toxic control measure to control emissions of hexavalent chromium and nickel from portable thermal spraying operations." (SDAPCD)

Agency Response: This comment is addressed in the response for Comment #1.1.

1.4 Comment: "We suggest that the following items be added to this subsection:
(3) The requirements of subsection (c) do not apply during periods of equipment breakdown, provided the provisions of the permitting agency's breakdown rule are met.
(4) The requirements this regulation do not apply to thermal spray operations at facilities performing such activities that use materials that do not contain chromium, chromium compounds, nickel or nickel compounds." (UA)

Agency Response: During the development of the ATCM, air districts requested that requirements related to breakdowns be removed because they already have specific regulations for breakdowns and malfunctions. Staff agreed that addressing breakdowns in the ATCM would be duplicative of district rules and was, therefore, unnecessary. The ATCM clearly states that it only applies to "…each thermal spraying operation at a stationary source that uses materials containing chromium, chromium compounds, nickel, or nickel compounds…" (see subsection (a) of the ATCM.) Therefore, the suggested applicability language is unnecessary.

1.5 Comment: "I live in Shasta Lake, California. Right now, there is factory by the name of Knauf Insulation that has been manufacturing without a federal or even a state 'Permit to Operate' going on 2 years and 11 months. Knauf is truly the environmental poster child of illegal toxic polluters, as they have consistently failed every air pollution test they have taken since opening in February of 2001. I bring this up because if you read the Knauf Final Environmental Impact Report certified in 1997, the wastewater discharge of a similar Knauf fiberglass manufacturing facility in Lanett, Alabama contained significant amounts of Hexavalent Chromium, among other hazardous substances. These documents are available from the Shasta County Air Quality Management District as a matter of public record. (530-225-5674) Many people who live in Shasta Lake, within mere miles of Knauf, are concerned about this issue." (CCA)

Agency Response: The ATCM only applies to thermal spraying operations that use chromium or nickel compounds. The regulation would not apply to Knauf Insulation, unless Knauf conducted thermal spraying operations using materials containing chromium or nickel. The local air pollution control district is responsible for issuing permits to stationary sources and is in the best position to address any issues related to this source.

2.0 Definitions

2.1 Comment: In the definition of "'Independent Tester', Items (11) (A) thru (D) should be deleted and replaced by 'a person who is qualified and approved by the Permitting Agency'." (GKN)

Agency Response: This comment is based on the assumption that an "independent tester" is required for conducting periodic measurements of the inward face velocity. The ATCM does not require the use of an "independent tester" to measure inward face velocity or conduct any other monitoring. An "independent tester" is only required if a facility owner or operator chooses to conduct a stack test, in lieu of using the emission factors contained in the ATCM. The ATCM does not require stack tests and it allows qualified individuals at thermal spraying facilities to conduct the required on-site monitoring. The language for the enclosure standards has been modified to clarify that the ATCM does not require the use of an independent tester for measurement of inward face velocity (see subsection (c)(1)(B)2. and the responses to the following two comments.)

2.2 Comment: "This suggested new item is based on similar regulatory language in Section 93102 and other Clean Air Act provisions. The definition (11) Independent Tester while well intentioned on the subject of conflict of interest, it appears to place a general distrust to California businesses and conveys to the general public that there is a disproportionate amount of bias on behalf of testing firms and the reports used to demonstrate compliance with the regulations. Is there evidence of such rampant falsification and bribery that the State of California must set precedence and insert such language? If this is not the first time 'independent tester' is defined in this manner within an ATCM or other regulation please provide references to existing regulations that have a similar definition.

Otherwise, we agree with 11(A) and (C) as written. We would suggest that 11(B), and (D) be deleted, since the dollar values indicated appear to be arbitrary. With regard to tester employees or agents, the idea of bringing personal finances into the picture surely seems to be an invasion of privacy. Who would be responsible for checking every potential individual that may be part of a testing team if they own stock in a company or not and how much." (UA)

Agency Response: Please refer to the response for Comment #2.1. In addition, The definition for "independent tester" is based on language in an existing ARB source testing regulation that has been in effect since 1981 (title 17, CCR, section 91208.) It has been used since that time to help eliminate potential conflicts of interest for parties that provide source testing services in accordance with that regulation. The definition has worked well in practice for the last two decades and has not led to any of the problems suggested by the commenter. The commenter's suggested language is also too vague and could result in potential abuses. For all of these reasons, we do not believe it is necessary to modify the definitional criteria set forth in the ATCM.

2.3 Comment: "The criteria that must be met for an 'independent tester' is too stringent. Operators should be allowed to utilize licensed professionals, regardless of any past or current relationship with the company. Furthermore, there might be times when the only available independent tester does not meet all the criteria specified in the Section 93102.5(b)(11) but has a proven record with the permitting agency and is familiar with the subject equipment. An additional provision should be added in Section 93102.5(b)(11) to allow the permitting agency the authority to approve independent testers on a case-by-case basis." (STI)

Agency Response: This comment is addressed in the response for Comment #2.2.

2.4 Comment: "'New Thermal Spraying Operation'. Add '…does not include the installation of a new permit unit or the modification of an existing unit at an existing thermal spray operation'". (GKN).

Agency Response: Staff agrees. The definition for "new thermal spraying operation" was modified to clarify that a "new thermal spraying operation" does not include "the modification of an existing thermal spraying operation". This language accomplishes what the commenter has requested and is more clearly stated than the existing language.

2.5 Comment: "The definition of new thermal spraying operations explicitly excludes the addition of a new thermal spraying permit unit at an existing thermal spraying operation. The District

supports this provision. However, to avoid confusion, the definition of new thermal spraying operations [Subsection (b)(19)] should be clarified to indicate modified thermal spraying operations at existing facilities are also not considered new thermal spraying operations under the ATCM. Modified operations have separate standards specified in the ATCM. In addition, operations that have received an authority to construct from an air district before January 1, 2005, should not be considered new operations." (SDAPCD).

Agency Response: Please refer to the response for Comment #2.4. Regarding authorities to construct, it was determined that the commenter's requested change is unnecessary because discussions with air districts and the commenter revealed that no authorities to construct were issued prior to January 1, 2005.

2.6 Comment: "Solar supports the exemption in Section 93102.5(b)(19) for a 'new permit unit at an existing thermal spraying operation' from being defined as a 'new thermal spraying operations.' However, to avoid confusion, the definition of new thermal spraying operations should be clarified to indicate modified thermal spraying operations at existing facilities are also not considered new thermal spraying operations under the ATCM. Modified operations have separate standards specified in the ATCM." (STI)

Agency Response: This comment is addressed in the response for Comment #2.4.

2.7 Comment: "These suggested items are based on similar regulatory language in Section 93102 and other Clean Air Act provisions. Subsection (b) Definitions: New item (2). Breakdown means an unforeseeable impairment of an air pollution control equipment or related operating equipment which causes a violation of any emission limitation or restriction prescribed by a permitting agency's rule or by State law and which: is not the result of neglect or disregard of any air pollution control law, rule, or regulation; is not intentional or the result of negligence, or improper maintenance; is not a recurrent breakdown of the same equipment; and, does not constitute a nuisance pursuant to section 41700 of the California Health and Safety Code, with the burden of proving the criteria of this section placed upon the person seeking to come under the provisions of this law." (UA)

Agency Response: As discussed in the response to Comment #1.4, a definition for "breakdown" is unnecessary in the ATCM because air districts already have specific regulations defining breakdowns and malfunctions that will apply to this ATCM.

2.8 Comment: "(14) Inward Face Velocity means average airflow in feet per minute as measured in accordance with Appendix 2. Definition of Inward Face Velocity as defined in the proposed regulation does not seem to match the procedure and end result of Appendix 2. Normally, the velocity can be defined as the volumetric flow rate in cubic feet per minute (cfm) divided by the area in the plane through which the air traverses.

Appendix 2 only describes the procedure to directly measure the velocity at various points in the plane of the booth to obtain an average velocity within the booth. Since measurements of velocity (fpm) are taken directly, there is no need to mathematically divide volumetric airflow by the cross-sectional area.

Furthermore, the definition uses the open intake area instead of the area at the plane of measurement, resulting in erroneous values for either volumetric flow calculations or velocity. This only would be true for booth configurations that have intake areas the same as the booth's

interior cross section. In United's case, our air intakes are on top of the booths in which the areas are much less than the booths cross-sectional area.

In our experience, measuring the air velocities at various locations within the booth is not the usual place where airflow monitoring is conducted. It is at the booth's interface or plane where the exhaust air flow meets the filter bank or water curtain (exhaust/control interface) or the point furthest downstream from the emission generation point where the minimum flow requirement is normally established. We would like to see this definition reworked – something like "Face Velocity" or "Exhaust Control Velocity". This definition notwithstanding, see discussion within the Enclosure Standard comment as to the need or precedence for establishing a Booth Velocity Standard within an ATCM." (UA)

2.9 Comment: "'Inward Face Velocity'. Delete '*measured in accordance with Appendix 2*'. The methods described in Appendix 2 address three specific booth configurations designed for operators who are inside the booth while spraying. Configurations utilizing robotic spray equipment which is located inside an enclosure, and spraying into a hood should only require; 1) a constant negative pressure within the enclosure and, 2) an acceptable capture velocity at the personnel door when it is opened." (GKN)

Agency Response to Comments #2.8 and #2.9: The definition of "Inward Face Velocity" was modified to ensure consistency between this definition and the provisions of Appendix 2. The remaining issues raised in these two comments are addressed in the responses to Comments #7.1 through #7.8.

2.10 Comment: "For the definition of Leak (15), we propose to clarify the definition to releases of any hexavalent chromium or nickel rather than any particulate matter. In our case, the same thermal spray booth that uses chromium or nickel products also uses materials that do not contain chromium or nickel. We propose the following: (15) Leak means the release of any hexavalent chromium or nickel from any opening in the emission collection system/device prior to the intended exhaust or emission point of that emission control system/device." (UA)

Agency Response: The requested revision is not appropriate because a person conducting a leak inspection would not be able to identify whether the leaked particulate consists of hexavalent chromium or nickel. It would be necessary to conduct a laboratory analysis to make that determination if more than one type of metal is being sprayed. Such additional analysis is unnecessary because it is common sense that any particulate matter leak is likely to result in hexavalent chromium and nickel emissions if these materials are used in the thermal spraying operation.

2.11 Comment: "'Thermal Spraying Operation'. Delete '*Thermal Spraying Operation does not include portable thermal spraying operations*.' See previous comment." (GKN)

Agency Response: This comment is addressed in the response to Comment #1.1.

3.0 Standards for All Thermal Spraying Operations

3.1 Comment: "The requirements for installation of a HEPA filter should apply to all facilities. Due to the highly toxic nature of the compounds at issue in this regulation, HEPA filters should be

required for all facilities with flame spray operations. Even very small existing facilities, if located next to a sensitive receptor, could pose an unacceptable risk. Short of that, the regulation should be amended to provide that existing facilities with HEPA filtration systems or other control equipment required by the local districts, will not be allowed to remove that equipment, regardless of the requirements of this ATCM. This will ensure that an increase in emissions from these facilities will not occur in districts that currently have more stringent requirements." (CCAEJ, CBE, EHC, SVTC)

Agency Response: It is unnecessary to require HEPA filters at all facilities because ARB staff's analysis found that less costly control alternatives to HEPA filters are adequate to protect public health for smaller existing operations that pose a relatively low risk. With regard to existing facilities that currently use HEPA filters or other control equipment, the local air districts can evaluate individual facilities within their jurisdiction and then decide if it is appropriate to require that existing control devices remain in place. This can be done through the air permits issued by each district. The ATCM states that all thermal spraying operations must obtain an air permit if they emit hexavalent chromium or nickel (see subsection (c)(1)(D)).

3.2 Comment: "…source testing should be required for new, existing, and modified facilities to prove at start-up and periodically thereafter that the controls are working at the required efficiency, and that emissions are not exceeding expected levels. The requirement for a self-certified emission inventory is simply not sufficient to accomplish this purpose." (CCAEJ, CBE, EHC, SVTC)

Agency Response: The ATCM allows, but does not require, the use of source testing to quantify emissions from thermal spraying operations. Instead, the ATCM contains emission factors to quantify emissions that are based on source test data from thermal spraying operations. Air districts can require a source test to verify the control efficiency of emission control devices. The ATCM requires new and modified thermal spraying operations to use control devices that meet control efficiencies certified by the equipment manufacturer. It also requires regular monitoring to ensure that the ventilation system and control devices are operating correctly. Emission inventories are commonly used by districts to enforce emission limits and districts have the authority to require additional documentation or source testing, if they believe it is necessary to verify emission inventory reports. ARB staff believes that these provisions are adequate to ensure that sources meet the standards specified in the ATCM and that it is not necessary to require source testing for all facilities.

3.3 Comment: "I am writing you in order to encourage CARB to adopt more stringent regulations surrounding the use of Hexavalent Chromium…In a recent Occupational Safety and Health Administration (OSHA) Trade News Release dated Wednesday, Dec. 4, 2002, OSHA Administrator John Henshaw states, 'The health risks associated with occupational exposure to hexavalent chromium are serious and demand serious attention...We are committed to developing a rule that ensures proper protection to safeguard workers who deal with hexavalent chromium.' According to the U.S. Department of Labor, calcium chromate, chromium trioxide, lead chromate, strontium chromate, and zinc chromate are known human carcinogens. An increase in incidence of lung cancer has been observed among workers in industries that produce chromate and manufacture pigments containing chromate. An increased rate of lung

cancer has also been reported among producers and consumers of pigment containing chromate. One study of chromium-nickel alloy foundry workers showed a statistically significant increase in lung cancers. Hexavalent chromium can irritate the nose, throat, and lungs. Repeated or prolonged exposure can damage the mucous membranes of the nasal passages and result in ulcers. In severe cases, exposure causes perforation of the septum (the wall separating the nasal passages). Acute exposures may cause perforation of the nasal septum within a week of exposure. Prolonged skin contact can result in dermatitis and skin ulcers. Studies show that some workers develop an allergic sensitization to chromium. In sensitized workers, contact with even small amounts can cause serious skin rashes. Kidney damage has also been linked to high dermal exposures. Chromium exists primarily in trivalent (Cr(III)) or hexavalent (Cr(VI)) oxidation states. Cr(VI) is a notorious environmental pollutant because it is a strong oxidant and much more toxic than Cr(III). Cr(VI) exists as the chromate ion in basic solutions and as dichromate in acidic solutions. In a review article on the toxicity and carcinogenicity of Cr(VI) in animals and humans that was published in the September 1997 issue of Critical Reviews in Toxicology, Max Costa, chairman of the Department of Environmental Medicine at the New York University Medical Center, cites studies that have found that as much as 10% of Cr(VI) is absorbed following oral exposure in humans. He also references studies of occupationally exposed subjects since the early 1980s that estimated that 10% of absorbed Cr(VI) may remain in the human body for up to 5 years. Finally, Costa points to research he and colleagues published in the March 1993 issue of Biological Trace Element Research, which demonstrates that total chromium accumulated in the liver, kidney, spleen, bone, lung, heart, muscle, and blood of rats and mice dosed orally with Cr(VI) for 4 or 8 weeks. In his review Costa concludes, 'The presence of [chromium] in these tissues indicates a potential for toxicity and cancer in many different tissues following drinking water exposure to [Cr(VI)] in solution.' Cr(VI) compounds are emitted into the air, water, and soil by a number of different industries. In the air, chromium compounds are present mainly as fine dust particles that eventually settle over the land and water. The Report on Carcinogens, published by the National Toxicology Program, says the atmospheric total chromium concentration in U.S. air is typically less than 0.01 µg per cubic meter (m3) in rural areas and 0.01-0.03 µg/m3 in urban areas. Chromium in ambient air is not regulated. The Report on Carcinogens also indicates that typical tap water can contain 0.4-8.0 µg per liter (L) total chromium, and that chromium in rivers and lakes usually falls between 1 and 10 µg/L. Cr(VI) by itself is not regulated in drinking water. The U.S. Environmental Protection Agency (EPA) regulates only total chromium in drinking water and has set a maximum contaminant level of 100 µg/L (more stringent state limits are often set at half that amount). OSHA and the National Institute for Occupational Safety and Health (NIOSH) establish permissible exposure limits (PELs) and recommended exposure limits (RELs), respectively, for hazardous substances in the workplace. PELs are based on the feasibility of controlling the exposure in question within the workplace, while RELs are based on requirements for preventing occupational disease. Although employers are legally bound only by PELs, they are encouraged by NIOSH to follow whichever limit is the more protective. The PEL for Cr(VI) in workplace air during an 8-hour work day, 40-hour work week is 100 µg/m3, while the REL for carcinogenic Cr(VI) compounds in workplace air is much lower: only 1 µg/m3. Chromium, deposited from acidic solutions of its hexavalent ion, has been the industrial rule for wear resistant, corrosion resistant coatings for many years. Although chromium coatings are durable many people have recognized that the plating process generates air emissions, effluent rinse waters, and process solutions that are toxic carcinogens, and a risk to human health and the environment. Alternatives to Cr(VI), such as Tungsten-nickel-boron (W-Ni-B) alloy deposition can be a potential substitute. W-Ni-B alloy deposition has excellent wear, corrosion, and mechanical properties and also may be less of an environmental risk. I urge CARB to do everything in its power to protect the citizens of California from the dangers of Cr(VI). Our environment is our most precious resource. Without clean air and clean water, our lives are made vastly less bearable. Please think of our children." (CCA)

Agency Response: This comment supports the regulation of hexavalent chromium and does not request any specific modifications to the proposed ATCM. Staff agrees that hexavalent chromium is a very toxic air contaminant,

and believes that the ATCM requires the best available control technology to protect public health.

4.0 Enclosure and Ventilation Standards

4.1 Comment: "Enclosure standards should only apply to open booths. Closed booths utilizing robotic spraying operations should be exempt from these requirements." (GKN)

Agency Response: ARB staff discussed this issue with the commenter and clarified that the ATCM doe not require inward face velocity requirements be verified separately for a hood inside of a booth. Staff also clarified that the ATCM does not require robotic equipment to be removed from the booth and facilities can work with their air district to develop an appropriate method for conducting the velocity measurements. This discussion resolved the commenter's concerns.

4.2 Comment: "An additional option under 93102.5(c)(1)(B) should be added to allow existing facilities the ability to demonstrate to the permitting agency that an alternative velocity may be utilized if the velocity is sufficient enough to prevent fugitive emissions prior to the air pollution control equipment." (STI)

Agency Response: The ATCM does allow an additional option for determining the inward face velocity. Subsection (c)(1)(B)2.b. allows the option of using the minimum velocity for metal spraying facilities as established in "Industrial Ventilation, a Manual of Recommended Practice," published by the American Conference of Governmental Industrial Hygienists (ACGIH). This ACGIH manual sets forth ventilation specifications for different equipment designs. It is appropriate to reference this manual instead of using the language proposed by the commenter because the commenter's language is too vague to provide meaningful, enforceable standards.

4.3 Comment: "Delete ' *the minimum velocity for metal spraying facilities as established in 'Industrial Ventilation, A Manual of Recommended Practice', 25th Edition or most recent version, Published by the American Conference of Industrial Hygienists which is incorporated by reference herein.*' The subject manual is very specific in the FORWARD on page vii 'This Manual is intended to be used as a guide, not as an official standard.'" (GKN)

Agency Response: During the regulatory development process, it was requested that this manual be included as an alternative source for establishing the minimum required inward face velocity. In response to this request, staff included language that allows the option of using this manual. Staff believes that this manual is appropriate to use because it is a widely accepted industry standard for ventilation design even though it has not been formally adopted by ASTM (American Society for Testing and Materials) or some other "official" organization.

4.4 Comment: "The reference to ACGIH's Industrial Ventilation book is not a publicly available reference. One must be a member of the ACGIH to have access or purchase the book. We

believe that citing such a reference within a regulation is fine as long as such procedures are suggested and not mandated via the Enclosure Standards." (UA)

Agency Response: This reference can be purchased from the ACGIH or it can be accessed at a public library. It is not necessary to be a member of ACGIH to purchase the reference, but members receive a discount. In addition, the regulation does not require the use of this document. It is only included as an option that thermal spraying operations may choose to use.

4.5 Comment: "The ATCM enclosure standards require that all inlets and access openings be covered during thermal spray operations except for make-up air vents [Section 93102.5(c)(1)(B)3] and prohibits opening of an enclosure until after thermal spraying has ceased [Section 93102.5(c)(1)(B)4.]. Solar supports the general principle of requiring all openings be covered during thermal spray operations to limit fugitive emissions. However, as written, this provision prohibits entrance or exit of operators from a spray booth during thermal spray operations to adjust the operation. This may result in facilities applying to install temporary plastic flaps, as allowed by the ATCM, rather than solid doors to cover openings. The ATCM should allow the temporary opening of access doors to allow personnel to enter or exit the spray enclosure when necessary, provided that the ventilation system is designed to provide at least the minimum inward face velocity specified in Section 93102.5(c)(1)(B)2 and to maintain other system face velocities above the minimum face velocity when the door is open." (STI)

Agency Response: After discussions with STI, a new subsection 93102(c)(1)(B)5. was added to allow for limited entry and exit for thermal spraying equipment calibration or research and development. This provision resolves the commenter's concern while also specifying conditions to ensure that fugitive emissions do not occur. The language includes a requirement to verify that there is negative pressure and a minimum inward face velocity of 100 ft/min when the personnel door is open. Local air districts also have the authority, as part of the permitting process, to determine whether a facility is conducting activities that would be covered by equipment calibration (i.e., equipment adjustment) or research and development. Thermal spraying facility owners/operators must obtain the permitting agency's approval for the use of temporary coverings (e.g., plastic flaps) as a means of providing full enclosure. This allows the permitting agency to prevent a facility owner/operator from replacing a solid door with a temporary covering.

4.6 Comment: "The ATCM enclosure standards require that all inlets and access openings be covered during thermal spray operations except for make-up air vents [(c)(1)(B)3.] and prohibits opening of an enclosure until after thermal spraying has ceased [(c)(1)(B)4.]. The District supports the general principle of requiring all openings be covered during thermal spray operations to limit fugitive emissions. However, as written, this provision prohibits entrance or exit of operators from a spray booth during thermal spraying operations to adjust the operation. This may result in facilities applying to install temporary plastic flaps, as allowed by the ATCM, rather than solid doors to cover openings. The ATCM should allow the temporary opening of access doors to allow personnel to enter or exit the spray enclosure when necessary, provided that the ventilation system is designed to provide at least the minimum inward face velocity specified in (c)(1)(B)2. and to maintain other system face velocities above the minimum face velocity when the door is open." (SDAPCD)

Agency Response: This comment is addressed in the response to Comment #4.5.

4.7 Comment: "Measurement of air velocity at any location within the booth as an operating parameter does not provide any information as to control efficiency or quantity of emissions. Furthermore, air velocity monitoring does not provide a practical or cost effective benefit with respect to assuring compliance with the emission standards set forth in this regulation. We believe that monitoring and maintenance practices of the air pollution control device is a more relevant means to assure minimal environmental and health impacts.

In order to exhaust or ventilate the air in the booth utilizing air pollution control, the booth will always be under negative pressure when in operation. This negative pressure should insure that all contaminates that may enter the airstream from the thermal spraying process will be captured and evacuated by the exhaust system…

If incorporation of air velocity type monitoring must be retained, may we suggest an alternative. We suggest placing a velocity pressure probe in the exhaust stack either prior to the abatement device or after (depending on the configuration). The velocity pressure data can then be converted to velocity and volumetric flow. This would be similar to the velocity pressure monitoring used in CCR Section 93102." (UA)

Agency Response: Since the ATCM requires the use of control devices that have high efficiencies, it is important to ensure that pollutants are captured and routed to these control devices. Even under negative pressure, a booth can have areas where the airflow is disrupted and the capture of pollutants can be affected. Velocity pressure measurements in the exhaust stack do not identify poor airflow patterns within the booth. ARB staff researched the available test methods for demonstrating capture efficiency for particulate matter and found them to be very costly and complicated. Therefore, staff determined that measuring the inward face velocity would be a cost-effective and relatively uncomplicated method for verifying good airflow and delivery of pollutants to control devices. Measuring velocity across the booth identifies "dead zones" where eddies exist or air flow may not be adequate, even though a velocity pressure probe may indicate good flow after the air leaves the booth and is exhausted through the stack. These "dead zones" can affect the capture efficiency of a booth. For these reasons staff did not follow the commenter's suggestion that the ATCM be modified to allow a velocity pressure probe to be used as an alternative.

However, staff added language to Table 4 (in subsection (e)(4)) to clarify that measurement of inward face velocity is not required for remotely located operations that have undergone a site specific analysis and meet the requirements of subsection (c)(1)(E). If UA meets the requirements for remotely located operations, they will not be required to measure inward face velocity.

4.8 Comment: "We believe that any references to indoor air quality or OSHA related issues or jurisdiction should be deleted from the proposed measure. Hence we suggest that (B)2 be deleted. Otherwise, we agree with (B)1, 3 and 4 as written." (UA)

Agency Response: The commenter has not identified a good reason why the suggested modification is appropriate and the ARB staff is not aware of one. To the contrary, enclosure and ventilation standards are necessary to ensure that toxic air contaminants are properly captured and transported to the control device, which in turn is necessary to achieve the required control efficiencies. Therefore, staff did not delete these standards. The reason for including enclosure and ventilation standards is to minimize emissions of toxic air contaminants into the ambient air, not to implement occupational safety and health policies in the workplace. However, compliance with existing Occupational Safety and Health Administration (OSHA) standards may help a thermal spraying operation achieve compliance with the ATCM.

4.9 Comment: "While we appreciate the intent of the regulation to be health protective as well as environmentally protective, portions of the Enclosure Standard appear to be federal and Cal/OSHA related issues. References to specific capture velocities, and use of ACGIH's "Industrial Ventilation, A Manual of Recommended Practice" are worker exposure designs that are usually delegated by either federal or state health agencies. If this is not the first time an enclosure standard is used in a California ATCM or similar air quality regulation, please provide us with references to such existing regulations that have a similar standard." (UA)

Agency Response: Please see the response to the previous comment. Enclosure standards are an important mechanism for ensuring that air pollutants are captured and routed to air pollution control devices. The ATCM is not the first air quality regulation that includes enclosure standards. Listed below are two federal National Emission Standards for Hazardous Air Pollutants (NESHAPs) that contain enclosure standards.

The NESHAP for Secondary Lead Smelters (40 CFR 63 Subpart X) which was promulgated in 1995 contains requirements for enclosure hoods and total enclosures and specifies minimum face velocities ranging from 250 – 350 ft/min. The regulation also requires face velocity measurements. The NESHAP for Boat Manufacturing (40 CFR 63 Subpart VVVV) which was promulgated in 2001 also requires an emission capture system for add-on control devices. For a permanent total enclosure, the regulation contains a requirement for a facial velocity of 200 ft/min or a pressure drop of 0.007 in. H_2O as established by EPA Method 204.

4.10 Comment: "Delete '*Any leak as determined by a visual leak inspection conducted in accordance with appendix 3, is a violation of this section*.' Appendix 3 implies that all holes are leaks and is not consistent with the definition of 'Leak'. Also, some spills or tracking of materials that do not become airborne should not be considered leaks. The 'violation' should be determined by the Permitting Agency." (GKN)

Agency Response: The definition of "Leak" in subsection (a) only includes releases from openings in emission collection systems or devices. This definition correctly states how the term "leak" is customarily understood by air pollution engineers. Nothing in Appendix 3 changes the definition of "leak" or is inconsistent with this definition. Since spills that do not become airborne do not

enter the emission collection system, they would not be considered "leaks" under the ATCM. Therefore, the requested change is not needed. Finally, it is appropriate for the regulation to specify the criteria for what constitutes a violation of the ATCM (e.g., a leak). The role of the agency enforcing the ATCM is to identify whether these criteria have been met (i.e., to determine whether a violation has occurred based on these criteria.)

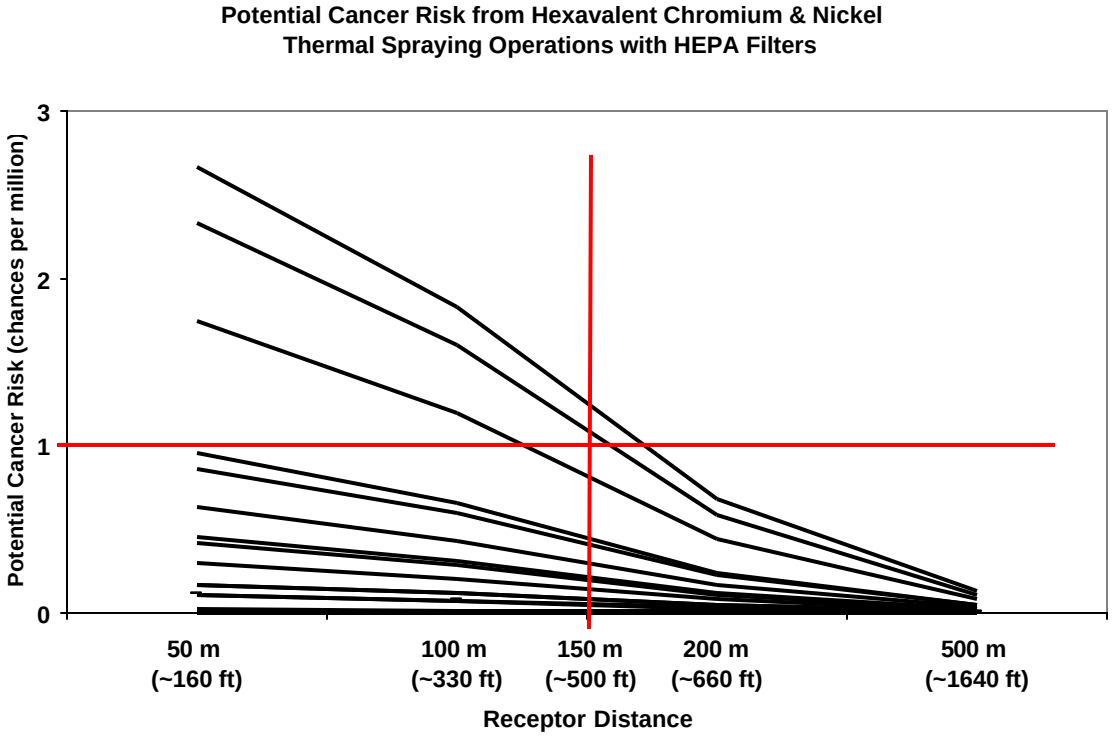
5.0 Standards for New Thermal Spraying Operations

5.1 Comment: "The standards for new thermal spraying operations contains a provision [Subsection (c)(3)(A)] that requires no new thermal spraying operation be located within 500 feet of the boundary of an area zoned residential or zoned for mixed use. Although the District agrees that thermal spraying operations located near such areas require additional scrutiny because of the actual or potential nearby location of sensitive receptors, the District is concerned that there does not appear to be any technical basis for the chosen distance nor any consideration of the size of the source or the air pollution control systems employed. The provision may also unnecessarily create public concern about existing facilities located within 500 feet of a sensitive receptor or residential area where the thermal spraying operations are well controlled and have undergone health risk assessments by local air districts that showed no significant adverse health risk." (SDAPCD)

Agency Response: The intent of the 500-foot requirement is to provide an added margin of safety to protect public health for new thermal spraying operations. This approach is consistent with many air quality regulations that contain more stringent standards for new sources. As described below, ARB staff has used the data and risk assessment approach that was documented in the ISOR to demonstrate that the 500-foot distance is appropriate to ensure that the potential cancer risk to nearby residents from new operations does not exceed 1 in a million. ARB's analysis of existing thermal spraying operations with a HEPA filter found that the potential cancer risk can exceed 1 in a million at distances less than 500 feet, as described below.

To estimate potential cancer risk, ARB staff used emission rates from 16 existing thermal spraying point sources that are equipped with HEPA filters and use materials containing chromium or nickel. Since the ATCM requires new thermal spraying operations to use a HEPA filter (or a control device that can achieve equivalent emission reductions), examining existing operations with HEPA filters provides a way of estimating the expected risk levels for new operations. The risk assessment was based on the results of air dispersion modeling that was performed for four actual thermal spraying operations, as described in the ISOR, Appendix F. The assessment was also based on emission rates that were calculated using data from ARB's 2004 Thermal Spraying Facility Survey. For hexavalent chromium, annual emissions ranged from 0 – 0.012 lbs Cr^{+6} and the highest average emission rate was 2.8E-07 g/s. For nickel, annual emissions ranged from 0 – 0.130 lbs Ni/yr and the highest average emission rate was 5.3E-06 g/s. The results of the risk assessment are illustrated in the figure below, which shows that the maximum potential cancer risk is approximately 1 in a million for receptors located at least 500 feet away. Receptors located closer

than 500 feet could be exposed to a potential cancer risk of 2 or 3 in a million. This analysis demonstrates that 500 feet is a prudent distance for ensuring that the potential cancer risk does not exceed 1 in a million for residents near new thermal spraying operations. This is illustrated in the following figure which charts potential cancer risk for the 16 facilities that have HEPA filters (please note that some of the plot lines for different facilities may overlap.)



It is possible that there may be public concern because existing operations have less stringent requirements than new operations, but air pollution regulations commonly impose more stringent requirements on new sources. For example, new source review regulations impose more stringent requirements for new sources than for existing sources (commonly called "grandfathered" sources). In addition, some federal National Emission Standards for Hazardous Air Pollutants contain more stringent requirements for new sources than for existing sources. However, the ATCM is designed to ensure that the potential cancer risk from existing thermal spraying operations is less than 10 in a million. It will be up to the local air districts to decide if additional or stricter requirements should apply to existing sources within their jurisdiction, based on the site-specific characteristics of these sources.

5.2 Comment: "The standards for new thermal spraying operations contains a provision [Subsection (c)(3)(A)] that prohibits any new thermal spraying operations be located within 500 feet of the boundary of an area zoned residential or zoned for mixed use. In phone Workshops, and in direct communication with ARB Staff, Solar has been unable to review the specific technical basis for such a prohibition. In addition to the lack of review by impacted sources of the

technical basis for such a prohibition, Solar believes it is inappropriate for ARB to establish a 'buffer zone' for the following reasons:

1. Such prohibition disregards local agency permitting authority to review, approve or deny site specific applications for permits to construct and operate thermal spray operations.
2. The prohibition presumes thermal spray operations cannot be constructed and operated to meet local risk management criteria regardless of material usage, frequency of operation or emission controls.
3. The prohibition is inconsistent with ARB's proposed exemption for portable thermal spraying operations that could operate anywhere, without emission controls or material usage restrictions, for 30 days.
4. The prohibition is establishing land use policy while ARB's Land Use Planning Guidelines are still under review and unapproved by The Board."

Solar recommends this prohibition on new thermal spray operations be removed, or the ATCM delayed until the technical basis is provided for public review and the concerns listed above are addressed." (STI)

Agency Response: Regarding the technical basis for the 500 foot requirement, please refer to the response to Comment #5.1. Data on potential cancer risk based on receptor distance is contained in the ISOR, Figures F-3 to F-6, which was made available on October 22, 2004. As Figures F-3 to F-6 illustrate, receptors would need to be located at least 1640 feet (500 meters) away from thermal spraying operations to reduce potential cancer risk below ten in a million. As discussed in the response to Comment #5.1, ARB staff refined this analysis using data from actual facilities.

The ATCM does not prevent permitting agencies from issuing permits for new thermal spraying facilities. The ATCM requires new thermal spraying operations to obtain permits and establishes the 500-foot criteria in coordination with the permitting agency's issuance of an authority to construct. The ATCM contains operational restrictions related to the use of chromium and nickel compounds only. ARB has statewide authority to regulate toxic air contaminants and the ATCM is consistent with ARB's authority to reduce or eliminate emissions of toxic air contaminants through the use of such operational restrictions.

ARB staff disagrees with the commenter's statements regarding risk management criteria. Risk management criteria vary throughout the State and ARB staff believes that a consistent approach is needed to protect public health. In addition, ARB staff does not believe that it is prudent to operate new thermal spraying sources that emit hexavalent chromium and nickel within 500 feet (approximately one city block) of residential communities. The response to Comment #5.5 discusses some additional reasons why relying on emission controls or monitoring alone is not a substitute for the 500 foot requirement.

As discussed in the response to Comment #1.1, portable thermal spraying operations are not being regulated at this time because staff believes additional investigation is needed. The Board has directed staff to investigate portable

thermal spraying operations to identify potential health risks and determine if regulation is warranted.

ARB staff does not agree that the ATCM establishes land use policy. Subsection (c)(3)(A) of the ATCM states:

> "No person may operate a new thermal spraying operation unless it is located outside of an area that is zoned for residential or mixed use and is located at least 500 feet from the boundary of any area that is zoned for residential or mixed use."

This subsection does not impose land use restrictions. Instead, it imposes operational restrictions that only apply to new thermal spraying operations. The operational restrictions are that no person may conduct thermal spraying using chromium, chromium compounds, nickel, or nickel compounds within the specified areas. New thermal spraying facilities can still be sited in these areas and thermal spraying can still be conducted at these facilities, as long as the facility operator does not operate thermal spraying equipment using chromium, chromium compounds, nickel, or nickel compounds. Thermal spraying facilities currently exist in California that do not use these compounds, and the facilities that do use these compounds only use them some of the time. The rest of the time they conduct thermal spraying using other types of materials. Because thermal spraying facilities can still be sited in the specified areas and can still conduct thermal spraying, we believe that the regulation does not regulate land use.

Even if subsection (c)(3)(A) could be characterized as a land use restriction, however, the ARB is still empowered to adopt it because no provision of California law prohibits the ARB from adopting a land use restriction as part of an air toxic control measure. It is therefore irrelevant whether or not this provision can be labeled a "land use" restriction.

5.3 Comment: "The determination of where thermal spraying operations are permitted should be based on risk and potential exposure criteria as determined by local Permitting Agency. Establishing a rule that prohibits new operations within 500 feet of a residential or mixed use zone will alarm the public if sited units with acceptable risks already exist." (GKN)

Agency Response: For new thermal spraying operations, the ATCM requires a site specific analysis conducted by the local permitting agency to ensure protection of public health. If the results of this analysis reveal public health concerns, local agencies can impose stricter requirements than those specified in the ATCM. For a detailed discussion addressing the issues raised in this comment, please refer to the Response to Comment #5.1.

5.4 Comment: "The buffer zone as proposed in this ATCM would usurp the role and responsibility the local district has to evaluate projects on a permit-by-permit basis based on health risk assessments." (IEA-2)

Agency Response: Please refer to the response to Comment #5.1 and #5.2, which address the issues raised in this comment. In addition, the ATCM does not usurp the role of the local districts, but it does require that all districts conduct a site specific analysis for new thermal spraying operations to ensure protection of public health. Currently, only a few districts have adopted new source review (NSR) rules that require health risk assessments for sources of toxic air contaminants. There is also no Statewide toxic NSR permitting regulation and the method of using health risk assessments in the permitting process may vary throughout the State. By implementing uniform standards for new thermal spraying operations the ATCM helps to ensure public health protection even in districts that do not have toxic NSR regulations.

5.5 Comment: "The ATCM requires best available control technology—high efficiency particulate air (HEPA) filters —for new sources [Subsection (c)(3)(B)] and that they undergo a health risk assessment [Subsection (c)(3)(D)]. The Initial Statement of Reasons indicates that the control technology is designed to reduce the cancer risk to less than ten in a million. In lieu of an outright prohibition of new thermal spraying operation that are potentially within 500 feet of residential receptors, it may be appropriate to require such sources to reduce cancer risk to less than one in a million at sensitive receptors and in residential areas (i. e., the boundary of areas zoned residential or mixed use) to provide a margin of safety. Since health risk assessments are typically based on normal operations, sources within 500 feet should be required to have high-efficiency prefilters in addition to HEPA filters to mitigate emissions in case of a failure of the HEPA filter, and to operate the entire air pollution control system up to the HEPA filter at negative pressure. The ATCM already includes monitoring of filter pressure drops with high and low alarms to alert operators in cases of filter failure. Additional monitoring for this type of new thermal spraying operation could be required by the local permitting agency, to provide alerts to other potential failures of the air pollution control system such as loss of sufficient negative pressure." (SDAPCD)

Agency Response: Control devices and monitoring equipment can fail regardless of how carefully they are designed or how much redundancy is built into the system. Considering the highly toxic characteristics of chromium, the 500-foot criteria will help ensure that the potential cancer risk does not exceed one in a million regardless of the risk management practices in a particular district, potential malfunctions of control devices, or accidents.

5.6 Comment: "Once regulatory buffer zones are established there will be assumed and automatic applications that can be subject to broad interpretations and permitting challenges to both existing and new operations." (IEA-2)

Agency Response: The intent of the 500-foot requirement is to provide an added margin of safety for potential receptors near new thermal spraying operations. As explained in the response to Comment #5.1, this approach is consistent with many air quality regulations that contain more stringent standards for new sources. The ATCM is clear that this requirement applies only to new sources. For existing sources, the ATCM is designed to reduce the potential cancer risk from these operations to well below ten in a million. It will be up to the local air districts to decide whether additional or stricter requirements should apply to

existing sources within their jurisdiction, based on the site-specific characteristics of these sources.

5.7 Comment: "…in regards to the 500-feet requirement being satisfied if the new thermal spraying operation meets the standard at the time authority to construct is issued, that's okay, unless zoning changes are announced well in advance, we have a bunch of authorities to construct that get issued, and then nothing happens. So we would hope that an expiration period can be put into that so there's a reasonable time period between the authority to construct and the authority to operate, that that could be a loophole we think could be solved…" (EHC oral testimony)

Agency Response: This comment refers to a proposed modification that was presented at the hearing on December 9, 2004. ARB staff proposed a modification to subsection (c)(3)(A) to specify that a new thermal spraying operation will satisfy the 500-foot standard if it meets this standard at the time it is issued an authority to construct, even if it does not meet the standard at the time of initial startup. The purpose of this proposed modification was to prevent a new thermal spraying operation from being adversely affected by zoning changes that may occur after the authority to construct is issued and construction activities have begun. The proposed language could avoid a potentially unfair situation in which a zoning change occurs when construction of a new thermal spraying facility is almost finished, and then the facility can never get a permit to operate because of the zoning change.

The commenter is concerned that this provision may be subject to abuse unless an "expiration period" is added. Staff agrees that this is a valid concern and revised the language in subsection (c)(3)(A) to include a one-year time period. If a new thermal spraying operation meets the 500-foot distance criteria when an authority to construct is issued and engages in "substantial use of the authority to construct " within one year of getting the authority to construct (or before any zoning change occurs), this will satisfy the 500-foot criteria even if zoning changes occur during that year. However, if a new thermal spraying operation gets an authority to construct and waits too long to engage in such "substantial use," they would have to demonstrate that they meet the 500-foot criteria at the time of initial startup. This provision will encourage new thermal spraying operations to start construction activities on a timely basis and will avoid situations where someone may rush to obtain an authority to construct in order to circumvent the 500-foot regulatory criteria. The definition of "substantial use" of an authority to construct was derived from a new source review rule adopted by the Bay Area Air Quality Management District. The "substantial use" concept has worked well in practice and serves as a good model for the ATCM. The one-year time period was chosen because it is a time period that is commonly found in many local district rules.

5.8 Comment: "…any special requirements relating to residential receptors for new thermal spraying operations potentially operating within 500 feet of residential receptors should only apply at the time the new operation receives an authority to construct from the local permitting agency. As currently written, the ATCM could increase the prohibition retroactively to newly permitted operations if zoning for surrounding areas changes after the initial permitting. The District

encourages ARB to provide local land use agencies guidance urging them to consider the location of existing thermal spray operations before rezoning a nearby area for residential or mixed use." (SDAPCD)

Agency Response: This comment is addressed in the response to the previous comment. In addition, in March 2005 the ARB approved its "Air Quality and Land Use Handbook: A Community Health Perspective" to provide guidance to local land use agencies who are making land use decisions.

5.9 Comment: "Delete '*No person may operate a new thermal spraying operation unless it is located outside an area that is zoned for residential or mixed use and is located at least 500 feet from the boundary of any area that is zoned for residential or mixed use*.' This requirement is vague and probably unenforceable due to the different 'mixed use' zoning requirements and definitions found throughout the state." (GKN)

Agency Response: The 500 foot criteria is a clear and enforceable requirement. "Mixed use" is a common zoning classification used in zoning laws throughout the State. Anyone in a particular jurisdiction can easily determine the boundaries of a "mixed use" zone by simply consulting a local zoning map. ARB staff did not include a definition for "mixed use" because the definition of this term varies among different local jurisdictions. Specifying a uniform definition for "mixed use" would have hopelessly confused the situation because a "mixed use" area for the purposes of the ATCM might have different boundaries than a "mixed use" area as defined in a local city or county zoning law.

A uniform list of zoning designations, including "mixed use", has been compiled by the California Resources Agency which recently partnered with U.C. Davis to gather zoning information from general plans. This data was used to develop statewide zoning maps, which were made available online from the California Spatial Information Library in April 2004. This resource makes it easy for persons to find out where "mixed use" areas are located.

5.10 Comment: "The 500 foot distance appears to be derived from guidance recommending that chrome plating operations not be sited within 500 feet of a residence. Chrome plating operations are very different than metal spraying. Chrome plating uses hexavalent chromium solutions that have a relatively high spill potential and are difficult to control if a release were to occur. Metal spray operations use solid wire or powders which are easier to control and clean up if spilled. Hexavalent chromium is only generated after oxidation in the system and would typically be contained in a booth or exhausted through a control device." (GKN)

Agency Response: Please refer to the response for Comment #5.1 regarding the appropriateness of the 500-foot criteria. ARB staff agrees that chrome plating is very different from thermal spraying and the guidance for siting residents near chrome platers in the ARB's "Air Quality and Land Use Handbook: A Community Health Perspective" recommends a greater distance of 1,000 feet.

5.11 Comment: "During the course of the past few years, IEA has been an active participant in the ARB's Environmental Justice Stakeholders Group during which time extensive discussions have occurred with regard to incompatible and conflicting land uses. A major effort and identified

component of the work program for this group focused on outdated land use policies, such as mixed use, that allowed for and supported industrial operations and sensitive receptors including residential, schools, churches and other public uses, to collocate in close proximity to one another. It is IEA's position that we are fundamentally opposed to a fixed buffer in any Air Toxic Control Measure that takes away the local district's ability to evaluate a project on a permit-by-permit basis. Instead, we believe the best vehicle to address screening distances is in the context of the ARB's draft Air Quality and Land Use Handbook for the following reasons:

- This proposed buffer zone in the ATCM for thermal spray would disrupt and in fact entirely circumvent a carefully thought-out and planned process to develop a land use guidebook – a process that is still evolving and subject to public hearings and peer review to set forth screening criteria for use by land use agencies;…

- Significant time and effort, which has included the Air Resources Board, local air pollution control districts, industry groups and environmental organizations, have gone into producing the draft guidebook. The draft guidebook was the result of significant input gained during the course of community outreach meetings and many diverse stakeholder meetings during the course of many months and with meetings held throughout the state;

- Preempting the land use guidebook process will set a precedent for generalization in land use decision-making rather than providing review and consideration of site specific circumstances.

- Including this buffer zone language in the ATCM will put in place a mechanism in some cases where industries cannot come into compliance and ultimately jeopardize existing operations and provide no means, even with advanced technology, to site new facilities or operations…

In summary, we hope that you will uphold and reinforce the integrity of the work of the Neighborhood Assessment Stakeholders Group to provide land use guidance and screening criteria to determine distance separations between industrial activities and sensitive receptors and reject the buffer zone language in the Thermal Spray ATCM." (IEA-2)

Agency Response: The responses to Comments #5.1 and 5.2 address some of the issues raised in this comment. The remaining issues involve the ARB's "Air Quality and Land Use Handbook: A Community Health Perspective" (Handbook) which was approved by the ARB at a public hearing on March 28, 2005. The ATCM is consistent with the Handbook and does not circumvent or preempt it. The distances recommended in the Handbook are intended to serve as a tool when land use agencies are making decisions regarding the siting of sensitive receptors near existing industrial facilities. The ATCM only applies to siting of new thermal spraying operations.

5.12 Comment: "The distance chosen corresponds to the distance from sensitive receptors for chrome plating operations that is specified (Table 4-3) in the May 10, 2004, draft ARB guidance document for local land use agencies entitled "Air Quality and Land Use Handbook: A Community Health Perspective." However, that land use guidance document does not suggest an outright ban on plating operations that are located closer than 500 feet from a sensitive receptor but only that local land use agencies use 500 feet as a screening criteria to trigger a thorough analysis of air quality impacts based on site-specific information. The District recommends that a similar approach for thermal spraying operations be taken in this ATCM rather than prohibiting all new thermal spraying operations within 500 feet of potential residential receptors." (SDAPCD)

Agency Response: The responses to Comments #5.1 and #5.2 explain why the 500-foot provision is appropriate. In addition, the distance recommendations in

the "Air Quality and Land Use Handbook" have a different purpose than the distance criteria in the ATCM. The distance recommendations in the handbook are intended to advise land use agencies when making decisions regarding the siting of sensitive receptors near existing industrial facilities. The distance criteria in the ATCM is intended to provide a margin of safety for new thermal spraying operations that would emit hexavalent chromium or nickel near existing residential areas. Staff believes this operational restriction is necessary to ensure protection of public health and to implement environmental justice policies. Using 500 feet only as a screening criteria for a detailed analysis would not adequately protect public health.

5.13 Comment: "IEA strongly urges the Board to reconsider the 500-foot buffer as a means to control the hexavalent chrome…What I recommend is the Board adopt the ATCM without the zoning or use it as a screening criteria rather than the hard and fast rule." (IEA-1 oral testimony)

Agency Response: This comment is addressed in the responses to Comments #5.1 and #5.2, which explain why the 500-foot provision is appropriate. Using 500 feet only as a screening criteria would not adequately protect public health.

6.0 Test Methods

6.1 Comment: "Add 'The control device manufacturer must verify the control efficiency using one of the following test methods or one approved by the Permitting Agency.' The referenced test methods can be revised and/or replaced by more effective tests in the future." (GKN)

Agency Response: ARB staff did not make the suggested changes because: (1) the listed test methods are the best ones available and it is not necessary to allow different test methods to be approved that may be less effective or otherwise inappropriate, and (2) California's Administrative Procedure Act (APA) does not allow incorporated test methods to be revised or replaced without following the procedures specified in the APA. During discussions with GKN, ARB staff agreed to expeditiously update incorporated test methods when it is appropriate to do so. APA procedures will be followed for all such updates, but an abbreviated rulemaking process should be possible because such technical changes are typically noncontroversial and can usually be accomplished relatively quickly.

6.2 Comment: "An additional option under Section 93102.5(d)(1) should be added to allow existing facilities the ability to demonstrate to the permitting agency an alternative test requirement(s) and test method(s) may be utilized to verify that there is sufficient velocity to prevent fugitive emissions in the fully enclosed downdraft booths and to adequately vent the exhaust to the air pollution control equipment." (STI)

Agency Response: There are test methods that can be used to demonstrate capture of particulate emissions, but the methods are too costly and burdensome to be practical for facility operators. After discussions with STI, ARB staff and STI agreed that neither of us could identify any alternative methods that would

satisfy their request and be cost-effective. Therefore, staff did not make the requested modification.

6.3 Comment: "*Test Methods* Can we include BAAQMD approved hexavalent chromium test Method ST-35 as one of the choices? If not, please provide technical discussion as to why it cannot be included." (UA)

Agency Response: The U.S. EPA has not determined that BAAQMD Test Method ST-35 is an equivalent test method for the measurement of hexavalent chromium due to various concerns about its technical procedures. For consistency, it is important that the U.S. EPA and other air quality agencies agree on the appropriate test methods. ARB staff therefore did not include Method ST-35 in the ATCM. Given U.S. EPA's position, it is not necessary to provide additional technical discussion of U.S. EPA's concerns.

6.4 Comment: "*Testing to Demonstrate compliance with Enclosure and Ventilation Standards* Consistent with our above argument to dismiss portions of the ventilation standard, we request to delete subsection (d)(1). Most thermal spray booths like all spray paint booths are generally designed and engineered by the booth manufacturer or outside consultant to assure that air flow into the booth meet an appropriate air exchange rate to optimize product quality and be health protective. Once the system is designed and setup, the airflow within the booth does not change unless there is a booth configuration or exhaust fan/blower change.

Notwithstanding the deletion request, Sections (d)(1)(A) and (B) appear to be identical except for when compliance is mandated. To reduce redundancy, we suggest that the regulation be combined and compliance dates called out separately. For example,
(A) The owner or operator of a thermal spraying operation subject to the control efficiency requirements in subsection (c)(1)(A), (c)(2)(A)2 or (c)(3)(A)1, respectively, must conduct a test to …all thermal spraying operations must comply with specified control efficiency requirements, enclosure standards, and ventilation standard as follows:
(i) by January 1, 2006 for existing thermal spraying operations
(ii) upon initial startup for new or modified thermal spraying operations". (UA)

Agency Response: The commenter's request in the first paragraph above is part of the request made by the same commenter in Comment #4.7. The request in the first paragraph above simply asks that a different section of the ATCM be modified to address the same issues raised in Comment #4.7. For the reasons set forth in the response to Comment #4.7, it is not appropriate to make either of the suggested modifications.

In the second paragraph of the above comment, the commenter requests an organizational change that would combine the requirements for existing thermal spraying operations with the requirements for new and modified thermal spraying operations. Staff did not make this change because we believe that the current organization is better; it provides a clear and easier to understand distinction between the requirements for existing operations and new/modified operations.

7.0 Monitoring and Recordkeeping

7.1 Comment: "Delete '*(in accordance with Appendix 2)*'. The methods described in Appendix 2 address only three specific booth configurations. Configurations utilizing robotic spray equipment which is located inside an enclosure, and spraying into a hood should only require; 1) a constant negative pressure within the enclosure and, 2) an acceptable capture velocity at the personnel door when it is opened." (GKN)

Agency Response: The requested change is unnecessary. The ATCM does not require that the methods described in Appendix 2 be used for all configurations. The first paragraph of Appendix 2 states that measurements can be conducted using an alternative method approved by the permitting agency. Therefore, owners and operators of thermal spraying facilities can work with their local air districts to develop measurement procedures that are appropriate for their individual configurations.

Since the ATCM requires the use of control devices that have high efficiencies, it is important to ensure that pollutants are captured and routed to these control devices. Even under negative pressure, a booth can have areas where the airflow is disrupted (e.g., eddies or dead spots) and the capture of pollutants can be affected. ARB staff researched the available test methods for demonstrating capture efficiency for particulate matter and found them to be very costly and quite complex. Therefore, staff determined that measuring the inward face velocity would be a cost-effective and relatively uncomplicated method for verifying good airflow and delivery of pollutants to control devices. During the rule development process, it was requested that the ATCM include guidance on conducting face velocity measurements. In response to this request, ARB staff developed Appendix 2 in order to provide guidance while also allowing for alternative methods to accommodate different situations.

7.2 Comment: "Add 1. Measure inward face velocity at each opening in accordance with Appendix 2, or an alternative method and schedule approved by the Permitting Agency. Alternative methods should be made available depending on the configuration of the booth. In cases where robotics and stationary fixtures are used, a requirement to *'Empty the walk-in booth prior to the airflow distribution measurement.'* is unreasonable. Delete *'At least once every 30 days'*. Add 'Per Permitting Agencies requirement'. Measurement of inward face velocities every 30 days for enclosed booths operated by robots is also unreasonable. By allowing the Permitting Agency to make this decision a reasonable inspection frequency can be determined." (GKN)

Agency Response: Please refer to the response to the previous comment, which addresses the use of alternative methods. In addition, two modifications were made to Appendix 2 to address the commenter's concerns. The statement "Empty the walk-in booth prior to the airflow distribution measurement." was deleted. The requirement to reduce the monitoring frequency for inward face velocity was also changed from once every thirty days to once every calendar year. While staff agrees that monitoring every 30 days is unnecessary, equipment can deteriorate over time and staff believes that monitoring at least one each year (at a minimum) is necessary to protect air quality. Yearly

monitoring is consistent with other monitoring requirements that are typically imposed by districts. If a local permitting agency believes that more frequent monitoring is appropriate for a particular facility, additional monitoring requirements can be included in the permit for that facility.

7.3 Comment: "Measuring velocities inside a fully enclosed booth will likely result in confusing or erroneous readings unrelated to capture efficiency. The ATCM requires that all thermal spray operations subject to the rule standards be conducted in a closed spray booth. Such booths typically operate at negative pressure. In this situation, face velocity is not important for preventing fugitive emissions during spraying operations. Continuous monitoring of system static pressures and/or flow velocities at key locations as determined by the local permitting agency (for example, in the spray booth or at the spray booth exhaust) and pressure drops across the filter system with alarms for high or low values provide adequate periodic monitoring of relevant inward face velocities. Solar recommends that existing facilities, with totally enclosed application rooms under negative pressure while materials are applied, be exempted from face velocity measurements and reporting." (STI)

Agency Response: Staff does not agree that measuring face velocity might result in "confusing or erroneous readings." Face velocity can be accurately measured in enclosed booths and such measurements are commonly done with booths used for painting and other processes. Staff also believes that this requirement is necessary and appropriate for the reasons discussed in the responses to Comments #4.7 and #7.1.

7.4 Comment: "Table 4(C) – we recommend deleting this requirement for the following reasons:
1. As discussed above, we believe it is not necessary to conduct velocity measurements within the booth, since airflow and exhaust parameters have already been established (for existing booths) in the design (during construction) to meet operational (transfer efficiency, quality assurance, etc.) and health protective criteria set forth by applicable OSHA standards.
2. Unless there has been booth damage or a breach to the ventilation system or control device, the airflow through the booth and air pollution control system doesn't change. Volumetric airflow remains relatively constant throughout the entire system when using fixed or variable speed drives in most exhaust motor/blowers. If the volume of air doesn't change, then the velocity of the air doesn't change.
3. Furthermore, the leak detection and inspection to be conducted every 90 days pursuant to Table 4(A) and (B) should satisfy the intent that airflow within the system is working adequately. The pressure drop monitoring not only indicates the condition of the dry filters but also would indicate if there was an airflow problem.
4. The configuration of our thermal spray booths is such that they do not lend themselves to the velocity measurements as suggested in Appendix 2.

5. In United's case, we operate approximately 10 thermal spray booths, and the proposed frequency of once every 30 days would be time consuming, costly and disruptive to operations." (UA)

Agency Response: The issues raised by this commenter are addressed in the responses for Comments #4.7, #7.1, and #7.2. Among other things, these responses explain why measuring face velocity as required in Table 4 (in subsection (e)(4)) is necessary to protect air quality, and why the other monitoring requirements in the ATCM are not adequate substitutes for measuring face velocity.

7.5 Comment: "A detailed measurement of inward face velocity for access points that are opened during normal operation (see comment on enclosure standards above) should be required at initial startup and after a change in the system configuration. However, requiring detailed measurements of the inward face velocity at each opening every 30 days, any requiring measurements in the interior of an enclosed spray booth [Subsection (e)(4),Table 4., and also Appendix 2] appears to be unnecessarily burdensome. Further, measuring velocities inside a fully enclosed booth will likely result in confusing or erroneous readings unrelated to capture efficiency. The ATCM requires that all thermal spray operations subject to the rule standards be conducted in a closed spray booth. Such booths typically operate at negative pressure. In this situation, face velocity is not important for preventing fugitive emissions during spraying operations. Continuous monitoring of system static pressures and/or flow velocities at key locations as determined by the local permitting agency (for example, in the spray booth or at the spray booth exhaust) and pressure drops across the filter system with alarms for high or low values provide adequate periodic monitoring of relevant inward face velocities." (SDAPCD)

Agency Response: The issues raised in this comment are addressed in the responses to Comments #4.7, and #7.1 through #7.4.

7.6 Comment: "A detailed measurement of inward face velocity for access points that are opened during normal operation (see comment on enclosure standards above) may be appropriate at initial startup or after a change in the system configuration. However, requiring detailed measurements of the inward face velocity at each opening every 30 days, and requiring measurements in the interior of an enclosed spray booth Section 93102.5(e)(4), Table 4 and also Appendix 2 appears to be overly burdensome." (STI)

Agency Response: The issues raised in this comment are addressed in the responses to Comments #4.7, and #7.1 through #7.4.

7.7 Comment: "In addition to measuring inward face velocity at each opening in accordance with Appendix 2, an additional option under Section 93102.5(e)(4), Table 4, Subpart (C) should be added to allow an alternative method and schedule approved by the permitting agency. Alternative methods should be made available depending on the configuration of the booth." (STI)

Agency Response: The issues raised in this comment are addressed in the responses to Comments #4.7, and #7.1 through #7.4.

7.8 Comment: "*Appendix 2 – Method for Measuring Inward Face Velocity* As per the above discussion of the Inward Face Velocity definition, the Enclosure Standard and Test Requirement and Test Methods, we suggest the following changes for Appendix 2 in order of preference and alternatives:
1. Delete this Appendix. A better indicator of capture and control can be the implementation of pressure drop across the control device coupled with perhaps an in-stack velocity pressure monitor.
2. Modify the first paragraph on page A-30 to remove the reference to the 30-day frequency and substitute an initial measurement.

1. *Hood Measurement*
Regarding the Hood Measurement and Figure 1, it is unclear what type of setup this represents. Is this an enclosed booth with separate and smaller built-in ventilation system or does this refer to volume sources? What is the difference between the exterior hood and enclosing hood (other

than use of slots)? Please cite the reference of the drawing or procedure as explained in Figure 1. Please mark where the emission source would be situated in each of the cases in Figure 1. The paragraph after Figure 1 (page A-30) is a bit confusing for it introduces concepts of volumetric airflow and pitot traverses not discussed or defined earlier in the proposed ATCM.

Volumetric airflow
It states to measure the volumetric airflow rate through the hood, yet volumetric airflow is not defined or utilized anywhere else in the Appendix or in the Enclosure Standard portion of the proposed ATCM. It is our understanding that volumetric airflow is a measurement of the total volume of air in units such as cubic feet that passes through an area (square feet) per unit time (such as minutes). Hence a value of 10,000 cu. ft./min (cfm) represents volumetric airflow. This is usually represented by the equation: Q = VA, where Q is the volumetric airflow rate in cubic feet per minute (cfm), V is the duct velocity in feet per minute (fpm), and A is the duct area in square feet (ft2). By measuring the velocity (or average velocity) at a point in the opening (plane of an area be it a duct or face of an exhaust plenum), one can calculate the volume of air passing through by multiplying the measured velocity by the area of the opening.

Pitot Traverses
Pitot traverse is a term used to collect velocity pressure (not velocity) at various points within an enclosed duct or pipe using a specialized tube that measures static and dynamic fluid flow pressures. Again the term 'pitot' has not previously been defined or used in the proposed ATCM. Please delete references made to pitot or pitot traverse. We recommend that the paragraph be deleted and replaced with a sentence that instructs the owner or operator to measure the velocity at each intersection point using a calibrated anemometer or other measuring device approved by the permitting agency.

2. *Walk-in Booth Measurement*
With regard to conducting velocity measurements in both cross-draft configurations represented, we provide the following comments:
1. The necessity or practicality of emptying the booth prior to measurement is in question. We understand that the less obstacles in the booth the more laminar the airflow. However, in our case, our walk-in booths have 'permanent' setups that include the robot armature and part holder stand and other equipment that is not normally moved and are quite heavy – requiring special lifts. The physical layout of the equipment represents optimal spatial arrangements and removal of such equipment and re-alignment upon re-installation would be quite burdensome and affect productivity.
2. Removal of such equipment prior to conducting velocity measurements would not represent actual conditions and velocities during operation.
3. The amount of measurements per booth appears to be excessive just to determine the average velocity within the booth. The depth of some of our booths are less than 8 feet, and we fail to see the significance of measuring velocities at different imaginary planes (grids) that are so close together.
4. Regarding the method of measuring velocities at different planes, please provide references for which this method is described.
5. We suggest using the centers of the imaginary square grids and not the intersections. This will increase the sample numbers and area coverage per plane. Also the intersections that fall on the edge of the booth will not be ignored even though that is where the non-laminar flows are most likely encountered.
6. We recommend that the average velocity be obtained at the booth filter interface or water curtain interface utilizing the imaginary grid scheme. This method would be accurate for most all enclosed booth designs and independent of where the intake air vents are located.
7. In our case, all of our thermal spray booths have air inlets located in the front top of the booth and leaves through filters or water curtain in the back of the booth. The methods outlined in this Appendix do not address this configuration and would need additional guidance as how to conduct the velocity measurements.

3. *Average Value of Readings*
Although the concept of averaging all readings is fine, we have concerns or comments on this section as follows:
1. It says to calculate the average value for all velocity readings, if all individual readings are within ±20% of the average value. Well, this is confusing, since you have to compute the average first in order to determine if there is an individual measurement that is not within ±20%.
2. What is the significance of using ±20%? What was the technical reference used in establishing this value. In this case, if the accuracy of the measuring device is ±10% then there is only a 10% margin to calculate average velocity.
3. Perhaps a better parameter is the standard deviation.
4. In the example for Hood B, the average velocity is calculated as the sum of all of the valid readings (750) divided by the number of readings (7). Yet the instructions say to ignore turbulent flow readings. Therefore, the average should have yielded 150 feet per minute using only 5 valid measurements.
5. In the examples, please include column subheadings such as Plane 1, Plane 2, and Plane 3.
6. Please expand the number of example measurement values to represent a typical setup as indicated in Figure 2 (page A-31). In this case the table should have equal the example, showing three planes and 8 intersections for a total of 24 readings. (Although, we believe it is better to represent the centers of the imaginary grids).
Perhaps this section should be presented like the previous examples outlined by Steps. Steps to gather the measurement data and steps to calculate the average velocity. After calculating the average velocity, there should be a step that then compares the value with the applicable regulation section to determine compliance. And if compliance is not met, suggest steps to correct (i.e., re-measure, check booth ventilation etc.)." (UA)

Agency Response: ARB staff discussed this comment with the commenter and learned that he was concerned that Appendix 2 would impose requirements that were not compatible with his particular booth configuration. As discussed in the response to comments # 7.1 and # 7.2, the ATCM does not require that the methods described in Appendix 2 be used for all configurations. The first paragraph of Appendix 2 states that measurements can be conducted using an alternative method approved by the permitting agency. Therefore, owners and operators of thermal spraying facilities can work with their local air districts to develop measurement procedures that are appropriate for their individual configurations. ARB staff explained this to the commenter and the explanation resolved his concerns, particularly when ARB staff observed that the commenter's operation was not subject to this monitoring requirement.

The commenter also believed that the use of pressure drop readings would be more appropriate than velocity readings. As discussed in the response to Comment # 4.7, pressure drop readings in the exhaust duct do not measure airflow patterns inside of the booth. Even under negative pressure, a booth can have areas where the airflow is disrupted and the capture of pollutants can be affected (e.g., eddies or dead zones in corners). For these reasons it is not appropriate to use pressure drop readings instead of velocity readings.

The commenter also expressed concerns about the use of individual readings within ±20% for calculating average velocity readings. Requiring that individual readings be within ±20% of the average is a commonly used practice that is also contained in other industry guidance documents for ventilation testing (e.g., American Society of Mechanical Engineers, ASME N510-1989, "Testing of

Nuclear Air Treatment Systems"; Naval Facilities Engineering Service Center, Information Bulletin IB-425.117, "Airflow Distribution Measurement At Hood Face Or Inside A Walk-In Booth"; and American Industrial Hygiene Association/American National Standards Institute, ANSI/AIHA Z9.5-1992, "American National Standard: Laboratory Ventilation.")

Regarding the example for Hood B, only two out of nine readings have been discarded because they are considered turbulent, so the resultant number of readings that are averaged is seven.

7.9 Comment: "Delete the requirement to trigger an alarm *'during the cleaning cycle when the high set point is exceeded.'* Reverse pulse air cleaning systems for cartridge filters could exceed the high operating set point for very short periods of time. Constant alarms due to cyclical cleaning are not desirable and should not be required. Filters are designed to accommodate a short higher pressure burst to clean the cartridge and help maintain the proper operating pressure drop." (GKN)

Agency Response: Staff agrees and made the requested modification to subsection (e)(2).

7.10 Comment: For recordkeeping related to equipment malfunctions and failures, "Add '…that causes or may cause uncontrolled emissions to be released to the environment.' Recording equipment malfunctions and/or failures that do not result in uncontrolled or increased emissions should not be required." (GKN)

Agency Response: Staff agrees and made the requested modification to subsection (f)(5).

7.11 Comment: "Records should only be retained for 3 years." (GKN)

Agency Response: The five-year records retention requirement is needed to document long-term compliance and it is consistent with other ARB ATCMs (e.g., chrome plating, ethylene oxide). For these other ATCMs, the five-year period has worked well in actual practice and has imposed a minimal burden on facility operators.

7.12 Comment: Regarding recordkeeping, monitoring, and reporting costs, "Costs could easily exceed $600 every 30 days by as much as 10 times if robots and permanent fixtures must be removed prior to testing." (GKN)

Agency Response: For velocity measurements, staff modified the language to reduce the monitoring schedule to once per calendar year. In addition, staff modified Appendix 2 to delete the statement "Empty the walk-in booth prior to the airflow distribution measurement." With these modifications, staff believes the $600 annual cost is a reasonable estimate.

7.13 Comment: "Table 4. in Subsection (e)(4) should specify monitoring frequency as at least once every calendar month or every calendar quarter rather than every 30 days or every 90 days, respectively. This will simplify the standard for facilities and air districts." (SDAPCD)

Agency Response: A draft version of the ATCM specified frequencies of once per month and once per quarter and staff received comments from another air district to change this to once per 30 days and once per 90 days. Staff believes that specifying the actual number of days has greater clarity and may better accommodate operations that conduct monitoring on schedules that do not correspond to calendar months or calendar quarters.

7.14 Comment: "We suggest that the monitoring requirement in Table 3, (A)2 be changed to once per week. This would be consistent with the conventional water curtain requirement stated in (B)(3). Furthermore, we believe that recording the pressure drop across the dry filter abatement system every operating shift is excessive for the following reasons:
- Dry filter abatement systems and associated pressure monitoring equipment are stable and reliable, hence operating parameters are expected to also be stable.
- Dry filters used in most industrial processes build up rather slowly, hence, the change in the pressure drop across the filters are not expected to change significantly on a daily basis.
- This would be consistent with the recordkeeping frequency in CCR Section 93102 for chrome plating." (UA)

Agency Response: As requested by the commenter, the ATCM was modified to reduce pressure drop recordkeeping to once per week.

8.0 Reporting

8.1 Comment: For small sources that qualify for an exemption under (c)(1)(F), "Add 'by March 1st of each Calendar Year, or on a date determined by the Permitting Agency'. Annual reports may already be required at different due dates depending on the Permitting Agency. This specific requirement could be duplicative and time consuming without an environmental benefit." (GKN)

Agency Response: Section (g)(6) allows permitting agencies to adjust the timeline for submittal of reports. Therefore, the requested change is not necessary.

8.2 Comment: "Initial Emission Inventory – Section 93102.5(g)(1) requires that an emission inventory be prepared in accordance with Appendix 1 for the reporting period of July 1, 2004 through July 1, 2005. Since this rule has not yet been adopted, it is unrealistic and improbable that a facility can go back in time to generate this emission inventory data necessary to calculate the emissions. New recordkeeping methods might need to be established to meet the requirements in Appendix 1 along with the training of personnel. A more reasonable deadline would be to have data collection for the first annual report begins 6 months after adoption of this rule and ends 18 months after adoption of this rule. The first annual report would be due on March 1st at least 18 months after adoption of the rule once and after one complete calendar year of data has been taken." (STI)

Agency Response: Most of the air districts where thermal spraying is conducted have requirements for the submittal of annual emission inventories. If the time period for the submittal of the annual emission inventory differs from the time

period specified in the ATCM for the initial inventory, a facility can work with district personnel to establish an alternative reporting schedule, as allowed by section (g)(6) of the ATCM. For those thermal spraying operations that are not currently submitting annual emission inventories, they can use material purchase records and the emission factors contained in Appendix 1 of the ATCM to estimate their past emissions and compile an annual inventory. For these reasons it is not necessary to modify the regulation as suggested by the commenter.

8.3 Comment: "Section 93102.5(g)(3) requires that existing thermal spraying facilities 'intend to begin using these materials containing chromium, chromium compounds, nickel, or nickel compounds on or after January 1, 2005 must notify the permitting agency at least 45 days prior to using these materials. This notification deadline should be extended such that all facilities have been notified of the rule adoptions and given adequate time to prepare the notification. At a minimum, the notification should not be required until 6 months after rule adoption to allow for adequate public notifications for all affected facilities." (STI)

Agency Response: After discussions with STI, ARB staff clarified that the 45-day notification requirement would not apply to STI because STI currently uses the listed materials and has already notified the local permitting agency during the permitting process. Many other thermal spraying operations are in the same situation and would not have to provide notification. For those facilities that have already provided notification, it is not necessary to postpone the notification deadline because all thermal spraying facilities in California should already be aware of the upcoming ATCM requirements. Staff did extensive outreach during the development of the ATCM. All known thermal spraying operations in California are on the ARB mailing list for this rulemaking and have been kept informed throughout the process

8.4 Comment: "Initial Notification. Is the intent of this section for existing thermal spray operations that currently only use materials that do not contain chromium or nickel compounds? Please explain." (UA)

Agency Response: Subsection (g)(3) requires notification by all thermal spraying operations that intend to begin using chromium, chromium compounds, nickel, or nickel compounds that they did not use previously. If an existing thermal spraying operation does not use any chromium- or nickel-containing materials and they decide to start using these types of materials, they must provide notification to the permitting agency before beginning the use of these materials. In addition, if a thermal spraying operation used only one of the listed materials (e.g., nickel compounds) and they wished begin using another listed material (e.g., chromium), notification would be required.

8.5 Comment: "Source Test Documentation, (B) Reports of Source Test Results. We request that the regulation provide more than 60 days to submit the source test report to the permitting agency based on the following:
- Hexavalent chromium and nickel stack sampling lab analysis can take up to 3 to 7 weeks to complete, depending on laboratory load.
- Allow adequate time for stack test report development by tester prior to receipt by facility.

- Upon receipt of draft report, review and incorporation of process monitoring data and emission factor development for finalizing can take up to 3 weeks to complete. Taking into account one to two iterations of the draft report.
- Review and certification of the final report and submittal to agency.
- Consistency with other federal and state reporting requirements. i.e., CCR Section 93102(i)(2)(A).

Therefore, we request that the regulation incorporate a 90-day submittal time. We also would like the ARB to consider adding a provision for an even longer time frame for those facilities with multiple thermal spray operations in which source testing on more than one booth is conducted to demonstrate compliance with the applicable emission limits. Or instead of specifying a time period, to allow a submittal time period as specified by the permitting agency." (UA)

Agency Response: Based on past experience, air district personnel and ARB staff believe that 60 days provides enough time for source test reports to be submitted. There may be a few situations where 60 days is not enough time. Such situations can be accommodated under subsection (g)(6), which allows permitting agencies to change the timeline for submittal of reports such as source test results.

8.6 Comment: "The regulation as proposed does not appear to specify the content of the performance test report or state that the report contains information as required by the permitting agency. Therefore we recommend adding a section similar to that specified in CCR Section 93102, Appendix 1 as follows:

(5)(C) The content of performance test reports shall include but not limited to:

1. A brief process description
2. Sampling location descriptions
3. A description of sampling and analytical procedures and any modifications to standard procedures
4. Test result
5. Quality assurance procedures and results
6. Records of operating condition during the test, preparation of standards, and calibration procedures
7. Original data for field sampling and field and laboratory analyses
8. Documentation of calculations, and
9. Any other information required by the test method or permitting agency

Or instead of (C) as written above, reference to an Appendix identifying the above similar to 93102(i)(1)c." (UA)

Agency Response: The requirements listed by the commenter may not be appropriate for all performance test reports. It is more appropriate for the permitting agencies to specify their requirements for submitting performance test reports since they are responsible for approving them. Therefore, it is not necessary to include these requirements in the ATCM.

9.0 Emissions Estimation Methodology

9.1 Comment: "The International Thermal Spray Association (ITSA) respectfully urges CARB to defer adoption of the proposed Thermal Spray ATCM and instead to expeditiously institute collaborative studies with industry to quantify the actual level of hexavalent chromium and nickel emissions. Thermal spray is a process with the potential to solve many environmental problems. A number of efforts, for example the HCAT (Hard Chrome Alternative Team) project, are in

process to develop thermal spray as a valid process alternative. Chrome plating solutions are essentially entirely chrome; in comparison, the tungsten carbide cobalt chrome used in thermal spray is 4% chrome. Thermal spray is clearly an exciting option. Unfortunately, as CARB correctly points out in their analysis of the proposed ATCM, definitive studies of the emissions of thermal spray processes have not been conducted.

In the absence of studies using current industrial process practices and current analytical techniques, the CARB analysis of potential emissions of hexavalent chromium and nickel employs the results of a 1986 study that is not applicable to real-world thermal spray processes and that leads to grossly inaccurately high estimates of hexavalent chromium emissions. In the 1986 study, Katsuhiko Sawatari and Fumio Serita appear to be developing an analytical method to differentiate between trivalent and hexavalent chromium for their toxicological studies. To evaluate various analytical methods, they needed a reliable source to produce plentiful chromium compounds in both oxidation states. By increasing the plasma temperature and regulating the gas flow they were able to use a standard thermal spray torch to produce a mixture of chromium oxides suitable for exploring the utility of various analytical approaches. In their experiment the operating parameters of the plasma metal sprayer were optimized to achieve the maximum production of hexavalent chromium. As such, the yields achieved and reported in their 1986 article in Industrial Health do not represent the hexavalent conversions that occur in industrial metal spraying operations. To obtain quality coatings with plasma spray, the operating parameters are carefully controlled to limit the temperature of the metal powder to less than the melting point. Sawatari and Serita were able to heat a significant portion of the metal powder to temperatures above the metals boiling point.

Using the conversion factors to hexavalent chromium derived from the Sawatari and Serita study mischaracterizes the actual plasma metal spray process. The 30 per cent conversion is not a worse case scenario: it is not beyond a worse case scenario; rather, it is inapplicable to actual industrial thermal spray operations. Instead of converting nearly 30 percent of the chromium metal spray powder, in one example of a processes used to apply metal coating conversion of less than 1 percent to hexavalent chromium. By appropriate selection of coatings and process design, lower emissions could be achieved. In actuality, plasma spray is replacing other metal coating processes because it is not dependent on hexavalent chromium as a starting material and produces very little hexavalent chromium conversions.

CARB has a unique opportunity to take the lead in conducting actual tests; these tests could be performed in 2005. Unfortunately, hexavalent chromium has invoked such fear and concern on the part of both industry and academia that actual experimentation is not likely to occur. CARB is in a unique position to partner with industry to conduct definitive thermal spray process studies. This will allow industry to customize the technique to minimize emissions of hazardous materials.

ITSA urges CARB to foster the potential growth of this exciting technology that shows promise for protection of the environment and superior technical performance. CARB should not be in the position of extrapolating behavior of thermal spray processes based on an eighteen year old study that does not reflect real-world conditions. Instead, CARB can take the lead in determining actual process behavior. Further evaluation and implementation of this valuable alternative to electroplating will be compromised if the ATCM is adopted. Instead, ITSA urges CARB to support definitive studies using current industrial and analytical practices. Imposing high control and monitoring costs on thermal spray processes based on older, inapplicable data constitutes an arbitrary disincentive to small to medium businesses that might otherwise be inclined to replace plating baths with thermal spray processes. Immediate passage of the current ATCM will have the additional unintended consequence of impeding development of additional new, alternative technologies. Instead, by deferring the rule and fostering experimentation, CARB has the opportunity to take the lead in California and Nationally." (ITSA)

Agency Response: It is not necessary to delay adoption of the ATCM. While ARB encourages research on thermal spraying emissions, ARB staff does not believe that experimental studies are lacking, as stated in ITSA's comments. ARB staff believes that adequate data exist to proceed with adoption of the ATCM, both from stack testing at actual thermal spraying facilities and from controlled scientific studies. The emission factors for hexavalent chromium were primarily based on the results of stack tests at actual thermal spraying facilities. The table below contains an extensive listing of data that were used to calculate hexavalent chromium emission factors for the ATCM. Most of the data shown in the table were from stack tests that directly measured hexavalent chromium emissions. At least six of the stack tests were performed in the 1990s and three were conducted between 2001 and 2003.

Summary of Test Data That Were Used to Develop Cr^{+6} Emission Estimation Methodology

#	Type of Data	Type of Material Sprayed	Test Measured		Reference from ISOR
			Cr^{+6}	Total Cr	
	Single-Wire Flame Spray				
1.	Laboratory Study	Stainless Steel Wire (Type 316)		✓	AWS, 1979
	Twin-Wire Electric Arc				
2.	Laboratory Study	Stainless Steel Wire (18Cr-5Ni)		✓	AWS, 1979
	Flame Spraying & HVOF				
3.	SDAPCD calculated value based on stack tests	unk	✓	✓	SDAPCD, 1998 (M08)
4.	Stack Test	unk	✓	✓	SDAPCD, 1998 (M09)
	Plasma Spraying				
5.	Stack Test	20% Cr	✓	✓	CATEF II Database
6.	Stack Test	100% Cr_2O_3	✓	✓	CATEF II Database
7.	Stack Test	4% Cr	✓	✓	CATEF II Database
8.	Stack Test	44% Cr	✓	✓	CATEF II Database
9.	Stack Test	20% Cr	✓	✓	SDAPCD, 1998 (M01)
10.	Stack Test	unk	✓	✓	SDAPCD, 1998 (M02)
11.	Stack Test	20% Cr	✓	✓	SDAPCD, 1998 (M04)
12.	Stack Test	unk	✓	✓	SDAPCD, 1998 (M05)
13.	Stack Test	20% Cr	✓	✓	ERM, 1995
14.	Stack Test	26% Cr	✓	✓	SCEC, 2001
15.	Stack Test	20% Cr	✓	✓	SDAPCD, 2002
16.	Stack Test	20% Cr	✓	✓	SDAPCD, 2004
17.	Stack Test	16% Cr and 20% Cr	*	✓	PES, 2000
18.	Stack Test	19% Cr and 68% Cr	*	✓	PES, 2000
19.	Stack Test	4% Cr and 44% Cr	*	✓	PES, 2000
20.	Cal-OSHA Study at a thermal spraying facility	unk	✓	✓	Gold, 2000
21.	Laboratory Study	99.9% Cr	✓	✓	Sawatari, 1986
22.	Laboratory Study	99.9% Cr	✓	✓	Serita, 1990

* Hexavalent chromium was measured in these studies, but the PES report stated that there were concerns about the quality of the hexavalent chromium results.

The commenter seems to believe that the Sawatari study was a major data source for development of emission factors. This is not accurate. The Sawatari study was only used to refine stack test results in cases where total chromium data were available, but data for hexavalent chromium were either not available or there were concerns regarding data quality.

The Sawatari study found that the fumes from plasma spraying contain 30% hexavalent chromium, but some stack test results have found that the percentage of total chromium that is hexavalent chromium can exceed 90%. The results of the Sawatari study were confirmed by a Cal-OSHA study that was conducted at an actual thermal spraying facility, and they were confirmed by Serita's 1990 laboratory study. When developing emission factors, ARB staff considered the possibility of assuming a 90% conversion to hexavalent chromium, as supported by stack test data, but we believe that assuming 30% was a more reasonable approach. The ATCM allows thermal spraying facilities to use the results of approved stack tests to document their emission levels. Therefore, they are not required to use any of the emission factors in the ATCM if they prefer to conduct a stack test instead.

ARB staff made the draft emission methodology available for public comment on August 6, 2004. Staff received no comments challenging the methodology until the week before the December Board Hearing, even though ITSA had almost four months to review the methodology.

Finally, the commenter claims that: "Immediate passage of the current ATCM will have the additional unintended consequence of impeding development of additional new, alternative technologies." The commenter offers no evidence to support this claim and ARB staff has no reason to believe that this would occur.

9.2 Comment: "Plasma Technology Incorporated (PTI) appreciates the opportunity to work with CARB during development of the Thermal Spray ATCM. PTI was founded in 1969 as a supplier of plasma applied coating, and PTI is approved or qualified to apply coatings by over one hundred of the largest companies in the world. PTI urges that adoption of the proposed ATCM be deferred until independent tests to characterize thermal spray emissions are conducted. PTI believes that test results obtained from typical thermal spray operations following normal industry practices will validate thermal spray as an environmentally-preferred process.

PTI has historically supported and continues to support optimized, environmentally-preferred processes that minimize emissions of hazardous materials. PTI has voluntarily worked with CARB and will continue to do so.

PTI agrees with CARB that experimental studies characterizing thermal spray emissions are lacking, however PTI is concerned about the applicability of the experimental basis on which the proposed ATCM is predicated. Specifically, the 1986 Sawatari study is not reflective of what would be used for real-world thermal spray applications; the conditions described are not efficacious for thermal spray processes. Further, the spray conditions described in the Sawatari study appear to be oriented toward purposely optimizing the generation of toxic fumes for use in animal studies.

It must be emphasized that the PTI thermal spray process is very different than the one described by Sawatari. PTI is concerned with producing high quality coating. Generation of fumes, as described in the Sawatari study, represents conditions that would result in poor quality coating. Further, PTI uses ceramic chrome oxide, 63%; PTI does not use 99.9% chrome, which would generate metallic chrome fumes.

PTI supports and suggests the development of regulations based on experimental findings using conditions that actually reflect real-world thermal spray operations. Based on theoretical analysis, there are indications that a properly-optimized thermal spray application should not result in problems from the release of hexavalent chromium. The parameters called out in process specifications to achieve the desired quality in manufacturing processes are anticipated to result in hexavalent chromium emissions in the low ppm range. Thus, good quality control is expected to fall in line with good manufacturing practices, which in turn falls in line with desirable environmental goals.

PTI has attempted to obtain data using actual thermal spray conditions from outside sources. To this end, we have contacted at least two dozen individuals in academia and in the military, as well as major suppliers. There was general agreement that required studies are lacking and that these studies need to be conducted. PTI has informally surveyed a number of academic institutions whose fields of study include thermal spray. Universities viz. Stony Brook, U.C. Irvine, U.C. Davis and Drexel. All emphasize the need for definitive research, and indicate that little has been done to actually characterize emissions from thermal spray applications. PTI has surveyed major manufacturers of powders used in thermal spray applications including Sulzer Metco, TAFA, Praxair, Hunter and Norton. PTI has also conducted a site visit to Donaldson-Torit, a provider of filtration systems. While Donaldson-Torit has been helpful in providing particle size distribution after filtration, data concerning emissions after spray but prior to filtration is not available. Some manufacturers of powders have not been able to provide data; most would like to see studies conducted. Hunter Chemical did indicate that they have done some analysis of conversion after spraying with chrome oxide, using a 7M Metco Metal Spray Gun. The overspray results were 0.004 ppm hexavalent chromium (Method SM 3500-Cr-D). PTI has informally surveyed at least ten individuals involved in military thermal spray activities; none could provide data concerning thermal spray emissions. Many indicated the desirability for such studies.

It would be preferable to defer the proposed ATCM until appropriate experiments, reflective of actual conditions used in industry, are conducted. PTI urges CARB to continue to work with the industry to establish both the size distribution and the characterization of the content of emissions from thermal spray activities. We are convinced that by so doing, processes which are inherently superior for worker safety, for neighborhood safety, and for the overall environment can be identified and implemented.

PTI has conducted thermal spray operations in Southern California for thirty-five years. During that time, PTI has operated as a fully-permitted facility with inspections by SCAQMD several times per year. Given the inapplicability of the Sawatari study to industrial processes, moving in haste on the proposed ATCM is not warranted. PTI is concerned that the proposed thermal spray ATCM will unnecessarily eliminate a practical option that would provide protection of neighborhoods and the environment. We urge that adoption of the ATCM be deferred pending expeditious, objective experimentation and evaluation of results." (PTI-1)

Agency Response: Please refer to the response to the previous comment regarding the numerous tests and studies that were used to develop the ATCM. PTI states that they agree with CARB regarding the lack of experimental studies. This statement is incorrect because ARB staff believes that adequate data exists, as discussed in the ISOR and the response to previous comment. Therefore, it is not necessary to defer adoption of the ATCM until additional research is

conducted. Finally, there is no reason for the commenter be concerned "… that the proposed thermal spray ATCM will unnecessarily eliminate a practical option that would provide protection of neighborhoods and the environment." The ATCM was carefully designed to allow thermal spraying operations to continue to operate in California; the ATCM simply requires facilities to control their emissions in a manner that is both feasible and cost-effective.

9.3 Comment: "One of the things we are calling for is a study. There has not been any studies. Even Monique Davis… said this had only been going on since last November. The problem is with that is there hasn't been thermal spray studies. There's no regulations. There's no studies. There's nothing definitive…
…there hasn't been any studies done at the gun. There's been studies after the fact in the HEPA filter. And there is no studies to say that HEPA filters are the best things to use. I hear HEPA filter, HEPA filter. They could be considered fire hazards. They do plug up. There are problematic things with them. And what needs to have happen, there needs to be a study to prove that HEPA filters actually work, and that's what we're calling for…
… We're looking to see an academic study done under control conditions that can show what exactly what hex chrome products, if any come, out of that gun…" (PTI-2 oral testimony)

Agency Response: Please refer to the response to Comment #9.1 to see a table listing the numerous studies that have been conducted for thermal spraying operations, including stack testing at actual facilities with HEPA filters and controlled laboratory experiments that measured the fumes generated by thermal spraying guns. As shown in this table, the ATCM used data from laboratory studies and actual facility stack tests.

PTI is incorrect in stating that Ms. Davis said the project has only been going on since November 2003. The project was formally started in November 2002 and ARB staff had previously contacted PTI in October 2002 to gather information and inform them about the project. PTI participated in ARB staff's first working group conference call in January 2003 and ARB has been in touch with PTI numerous times throughout the project via conference calls, e-mail, and regular mail.

The ATCM does not require the use of HEPA filters – it contains a control efficiency requirement and facilities can use a variety of control devices to achieve the required efficiency level. Regarding potential problems with HEPA filters, more than 35% of the thermal spraying facilities in California already use HEPA filters, which demonstrates that they can be used effectively for this application. HEPA filters have also been in use for may years at a various other industrial operations, and past experience indicates that properly maintained filters do not present a fire hazard and that filters can be prevented from clogging by readily available cleaning systems.

9.4 Comment: Regarding stack test data that was used to develop the emission methodology, "…we haven't been privy to the stack test. When we asked for the stack testing, we were told we had to wait 30 days…" (PTI-2 oral testimony)

Agency Response: The draft emission estimation methodology was made publicly available on August 6, 2004. ARB staff received no comments challenging the methodology until the week before the December Board Hearing, even though PTI had almost four months to review the methodology. PTI did not request the stack test data until December 2, 2004, just 7 days before the December 9, 2005, Board hearing. The stack test data were mailed to PTI on January 7, 2005, in accordance with Public Records Act requirements.

9.5 Comment: "I'm here speaking in opposition to the ATCM as proposed. The reason why I speak to you is the control of the exposures and emissions is often a very significant cost of doing business, and we want to make sure we get it right. Appropriate controls to effectively and efficiency control emissions require the knowledge of the characteristics of the emissions. To date, that knowledge is not available…Requiring what may be unnecessarily conservative controls place an undue cost burden on a vital technology and could possibly drive business out of California. Delaying the adoption of this proposed ATCM for hexavalent chromium and nickel just long enough, maybe a year, to give the ARB time to lead the research to obtain factual information concerning the production of hexavalent chromium and the factors that influence particle size distributions for the various thermal spray processes would allow determination to get the proper and the most appropriate control technology in the standard…

…The 2002 study referenced in the excellent work done by your staff here reportedly is actually a cautionary statement in the MSDS. It states that it may produce fumes and it may contain hex chrome. This statement is based on chromium in welding, not thermal spray. If there were scientific studies to support this cautionary statement for thermal spray, one would expect they would be cited in this staff report…

…There's some language in the proposed ATCM that implies that zero emission is absolutely attainable. And I think we can reword these paragraphs, paragraph C5, F and G in such a way that the intent is clear without implying that the impossible to achieve zero is necessary…" (UNMACK oral testimony)

Agency Response: It is not necessary to delay adoption of the ATCM in order to conduct additional research. Please refer to the response for Comment #9.1 for information on the numerous stack tests and studies that have been conducted for thermal spraying. In addition, Appendix C of the ISOR contains information on three studies that have obtained data on particle sizes for thermal spraying. More than 35% of the thermal spraying facilities in California already use HEPA filters, which demonstrates that they can be used for thermal spraying without resulting in an undue cost burden.

The comment regarding the "2002 study" refers to the ISOR, Section C.2., that pertains to fumes from thermal spraying. ARB did not refer to a "2002 study"; the ISOR clearly states that a thermal spraying material supplier had found that hexavalent chromium fumes may be produced when materials are exposed to high temperatures and the ISOR references the supplier's material safety data sheet (MSDS.) Temperatures for welding processes (3,000 – 20,000 °C) are in the same range as temperatures for thermal spraying (3,000 – 16,000 °C.) Therefore, it is possible to form hexavalent chromium during thermal spraying as well as welding, and this was confirmed by the laboratory studies that are listed in the response for Comment #9.1.

The comment regarding "zero emission" is unclear since the reference does not match any of the sections in the ATCM. Staff requested clarification from the commenter but received no response.

9.6 Comment: "…I'm opposed to the immediate adoption of the proposed thermal spray ATCM. And I say that as a representative of Plasma Technology, of the International Thermal Spray Association, and as a concerned citizen. Regulations must be based on experimental data, data that is reflective of realistic industrial applications. The studies required to develop the proposed ATCM have not been conducted…

…My colleague, Steve Norris, addressed the inappropriateness of extrapolating from the largely inapplicable 1986 Sawatari study. And, by the way, I've read those reports a number of times, and Sawatari is invoked both directly and indirectly a number of times. And I did not have access to the study until the end of October directly…

…You've got to know the particle size distribution. I'm involved in contamination control. A HEPA filter is not the be-all and end-all…" (BFK oral testimony)

Agency Response: This issues raised by the commenter are addressed in the responses to the previous comment and Comment #9.1. In addition, the draft emission estimation methodology was made publicly available on August 6, 2004, and it included a reference to the Sawatari study. The commenter did not request the Sawatari study until October 26, 2004, and it was sent to them by facsimile on the same day. Regarding particle size distribution, Appendix C of the ISOR contains information on three studies that have obtained data on particle sizes for thermal spraying. Finally, the ATCM does not require the use of HEPA filters – it contains a control efficiency requirement and facilities can use a variety of control devices to achieve the required efficiency level.

9.7 Comment: In Step 5 of Appendix 1, if we are interpreting this right, using the highest emission factor for a material that is used in more than one type of thermal spraying operation is overly conservative. Why not just calculate the emission for each thermal spray operation by source, material type and emission factor and then compute the total. (UA)

Agency Response: Staff addressed the commenter's concern by modifying Step 5 of Appendix 1. Under the modified language, the highest emission factor would only be used when the quantity of material used for each operation is unknown. The modifications resolve the commenter's concern while also addressing what happens when there is not enough information to determine the emissions for particular operations.

9.8 Comment: "Table 1-2: Thermal Spraying Emission Factors for Nickel. We suggest that the emission factor values display the same number of significant digits for all operation types and control efficiencies as was done in Table 1-1." (UA)

Agency Response: The emission factors for the Tables 1-1 and 1-2 were based on different data sets. Therefore, the significant digits are not necessarily the same. It is not appropriate to either eliminate significant digits that we know, or

create significant digits that we do not know, just so the same number of significant digits can appear in every box on Table 1-2.

9.9 Comment: "In Step 6, the equations should be consistent. Either add the term 'sprayed' after Cr in Equation 3, or delete the word 'sprayed' in Equation 4 and Equation 5…For consistency, in the table under Step 5, either add the word 'sprayed' to the lb Cr heading or delete the word 'sprayed' in the nickel header." (UA)

Agency Response: Staff agrees and made the requested modifications.

9.10 Comment: "Point Source Example (in Appendix 1). It is suggested that the %Total Chromium and %Nickel columns of the facility's operation table be deleted since this information is presented in Step 1 and Step 2 as a progression.

It is suggested that Step 1 and Step 2 include all forms of Cr and Ni in the product. (Include Cr and Cr compounds and Ni and Ni compounds). May want to include a statement that suggests that such information is available from the product MSDS or other technical data sheets. This will serve as a reminder as to where to get this information.

It is suggested that the third sentence (starting with Listed) in the first paragraph under Point Source Example be removed and move the sentence beginning with 'An example calculation' be moved above the first Table. Also 'Step 1: Identify…' should be moved just before the first table. Please modify the Step 1 instruction to combine the Step 3 statement as follows:
'Step 1: Identify and compile all thermal spraying materials and annual quantities used that contain at least 0.1% by weight of chromium (Cr) or nickel (Ni) and any compounds that contain Cr and Ni at each thermal spray operation'.

The table shown under Step 2 should be moved to just after the line 'The following four products contain …XYZ; Wire #1.' And before 'Step 2: Determine the total percentage of Chromium and or Nickel.' Since the numbers are before the actual chrome or nickel component is isolated.

The heading of the table in Step 2 should state '% Total Cr and Cr-compounds' and '% Total Ni and Ni-compounds'. Also add a table footnote stating that a product may have more than one listing of Cr or Ni (i.e., chromium carbide 75% and chromium 5%) and that the total weight percent is the addition of all components having chrome or nickel.

Step three seems to be redundant and suggest that this be consolidated into Step 1 as suggested above. We recommend modifying Step 3 to incorporate the conversion to elemental chromium and nickel as shown at the bottom of Page A-23 and with the above-suggested changes as well. In this way the current Step 3 table can be deleted and the Step 4 table can be modified to show the 'final' percentages of elemental chromium and nickel.

In the table under Step 4, add an asterisk in the %Total Chromium and % Total Nickel column headings to reference a table footnote stating the following: '* Represents the percentages of elemental chromium and nickel after conversion from each compound form'.

For Step 7, we suggest that the introduction sentence be expanded to emphasize why we need to calculate the one-hour maximum hourly emission rate for nickel and reference the Appendix 1 – Emission Calculation Method Step 7 (this is awkward since this section is part of the same Appendix and Step number – but not the example) and Appendix D of the *Thermal Spraying ATCM Initial Statement of Reasons*.

We suggest to apply the above comments and changes for the Point Source Example to the Volume Source Example." (UA)

Agency Response: In the portion of Appendix 1 labeled "Point Source Example," staff modified the language in Step 1 to add "chromium compounds" and "nickel compounds." Staff did not make the requested change in Step 2 because it would not be correct. Step 2 is the overall percentage of chromium and nickel after accounting for the chromium contained in chromium compounds and the nickel contained in nickel compounds. Staff did not make the remaining requested changes to Steps 1 through 4 because staff believes the current format provides greater clarity. For Step 7, maximum hourly nickel emissions must be calculated because facilities must confirm that they comply with the ATCM's limits on maximum hourly nickel emissions. Since this is already discussed in the last paragraph of Step 7, no changes were made.

Finally, the commenter suggests that the modifications requested for the "Point Source Example" also be made to the corresponding sections of the "Volume Source Example." The response in the paragraph above also applies to the "Volume Source Example" (i.e., Staff made the requested modification to Step 1 but did not make any of the other requested modifications for the reasons stated above.)

9.11 Comment: "It appears that isolation of elemental chromium or nickel is important to the results of the hexavalent chromium and nickel emission estimate. However, there is no explanation on why this step is necessary, or where such procedure has been utilized. Please add a section that clarifies the need for this step and cite the source(s) that call out this procedure.

Furthermore, the example of isolating the elemental portion does not match the progression of the Point Source Example for 'Thermal Spraying Inc.'. Please incorporate one of the powder materials used in the example and follow through so that we may see the "effect" of the conversion in the later steps. This can be done by changing the example material Power ABC to having a Cr2O3 content of 95% instead of 25%." (UA)

Agency Response: Stack test results and the resulting emission factors are based on the quantity of chromium and nickel that is sprayed – not the total quantity of thermal spraying material. Therefore, a thermal spraying material that only contains a small percentage of chromium will generate lower emissions than a material that contains a large percentage of chromium. For this reason, it is important to isolate the portion of the material that is chromium or nickel. In addition, no modifications were made to change the example material to chromium oxide because Step 2 of the example already contains a calculation for determining the chromium portion of chromium oxide. The requested modification is therefore unnecessary.

10.0 General Comments

10.1 Comment: "Formatting Starting with section(c)(1)(A)1, the format of the regulation is difficult to follow as there is not enough space between paragraphs and numbered lines. Please add a whole line space between the numbered item sections. For item 3 (page A-7), please add a half line or whole line space starting with 'For volume sources, …' and 'Emissions of hexavalent chromium …' For the Table 1 and Table 2 footnotes, need a ½ line space between the bottom of

the table and the first footnote. And again just before 1a., and in-between a., b., and 2. It is also suggested to extend these formatting comments throughout the rest of the ATCM where applicable."

"With regard to formatting, please remove the periods after each referenced subsection as such: ' subject to subsection (c)(2)(A)2 or (c)(3)(A)1, respectively,…'. This occurs at top of page A-9, top of A-10, middle and bottom of page A-13.

With regard to placement of Table 3, we suggest to place it after section (e)(3) text and before (e)(4) Inspection and Maintenance Requirements, this way all of the monitoring requirements have been formally introduced before summarizing them.

To better differentiate between the Emission Calculation Method presented in Appendix 1 and the example calculations also presented in Appendix 1, we suggest renaming (or renumbering all of the appendices) to Appendix 1A – Emission Calculation Method and Appendix 1B – Point Source Emission Calculation Example and Appendix 1C – Volume Source Emission Calculation Example. This way when referencing let's say 'Step 2' in the Appendix 1, there would not be confusion as to which Step 2 we are discussing.

In Appendix 1, " For readability, we suggest the following enhancements:
- Use Bold-face type for the table titles (Table 1-1: Thermal ….)
- Reduce the letter font size by one point for the data presented within the table (i.e., the operation description and emission factor values).
- Bold the outer lines of the tables
- Add more space above and below the values in each cell (i.e., increase the table cell height and center text in each cell)
Similar formatting can be applied to the remaining tables in Appendix 1." (UA)

Agency Response: This comment suggests that staff make a number of nonsubstantial formatting changes to the regulation. How best to format the regulatory text is a subjective judgement call. Staff modified the formatting where we believed it improved clarity or the appearance of the regulation. In any event, many of the suggested changes (e.g., font size, spacing, appearance of tables, etc.) are not under the control of the ARB because they are dictated by the uniform publication conventions of the official California Code of Regulations.

10.2 Comment: "There is no background information or review process to consider the technical basis for proposing the ATCM." (IEA-2)

Agency Response: The technical basis for the ATCM is contained in the Initial Statement of Reasons that was made available for public review on October 22, 2004. In addition, draft survey reports and emission calculation methodologies were made available for public review and were discussed at public workshops prior to the release of the Initial Statement of Reasons. Finally, there is a "review process" for the ATCM; it is the process described in the Administrative Procedure Act, which provides for public comment, a public hearing, response to comments in the Final Statement of Reasons, and review of the rulemaking by the Office of Administrative Law.

10.3 Comment: Regarding ARB workshops, "…we didn't know about them. And there's several of them that got cancelled. The one that we were planning to got canceled. And it ended up being

sort of a workshop at AQMD which we did attend…
" (PTI-2 oral testimony)

Agency Response: ARB staff made a concerted effort to keep PTI involved in the ATCM development process, since they were identified as the largest thermal spraying operation in the State that would be affected by the regulation. ARB conducted several individual conference calls with PTI representatives and their consultants. PTI is on our mailing list and they received written notices prior to all three workshops, which were each accessible by toll-free conference call. However, PTI chose to participate in only one of these workshops. No workshops were cancelled, but the third workshop was postponed from August until September 2004 and a PTI representative (Mr. Unmack) participated in this workshop. The AQMD workshop that PTI attended was for a South Coast Air Quality Management District rule, not for the ATCM.

10.4 Comment: "Considerable effort has been expended by industry and by the military through the HCAT Program to develop thermal spray as a preferred substitute for many chrome plating applications…If passed, the negative impact of this ATCM will be wide ranging. The intense regulatory scrutiny will demotivate players who were considering adopting thermal spray…

…The ARB staff reports incorrectly indicates that only one facility is going to be significantly impacted by the cost of implementing the proposed controls. What about the consequences of monitoring and recordkeeping for at least 24 other known facilities? That's not been considered. CARB has documented that three facilities will cease thermal spray operations rather than comply with the new regs…" (BFK oral testimony)

Agency Response: Staff agrees that thermal spraying can have environmental benefits when compared to hard chromium electroplating, which is already subject to an ATCM. Thermal spraying may generate less hexavalent chromium emissions than electroplating, but control measures are still needed to protect public health from the toxic emissions created by thermal spraying. It is possible that thermal spraying will be considered even more environmentally preferable after OSHA lowers the permissible exposure limit (PEL) for hexavalent chromium. In addition, ARB staff does not expect the ATCM to discourage thermal spraying, since most existing operations already have control devices that comply with ATCM standards. For new facilities or facilities that do not currently have control equipment, staff believes that the ATCM standards are reasonable ones that can be achieved without undue expense. In addition, some of the technologies being pursued by the HCAT program (e.g., tungsten carbide cobalt HVOF spraying) will not be affected by the ATCM if they do not involve chromium- or nickel-containing materials.

The ARB has considered potential impacts for 37 facilities, including costs for monitoring and recordkeeping, as documented in the ISOR. For the sake of completion, the ISOR even includes cost impacts for three facilities that have indicated they plan to discontinue thermal spraying because it represents such a minor portion of their business.

10.5 Comment: "…what I'm hearing here is that this is creating a lot of Chrome 6, and I don't see that. The only report that I saw was a report that was handed to me just two days ago showing 30 percent Chrome 6 done back in 1986…I'd like to see the data that's presented to you guys so I can confirm it. So how do I get that…" (UCD oral testimony)

Agency Response: As requested, staff provided the ISOR information to the commenter in December 2004. Staff also met with the commenter at his facility in March 2005.

11.0 Support Comments

11.1 Comment: "I am writing on behalf of the California Air Pollution Control Officers Association (CAPCOA) to express support for the Air Resources Board Thermal Spray Air Toxic Control Measure (ATCM). The ATCM will reduce chromium emissions, one of the most potent carcinogens, from many facilities in the state. CAPCOA supports the more stringent requirements for new operations located near the boundary of areas zoned for residential or mixed use." (CAPCOA)

Agency Response: The ARB staff appreciates the commenter's support of the ATCM.

11.2 Comment: "The San Diego County Air Pollution Control District (District) appreciates the opportunity to comment on the proposed Airborne Toxic Control Measure (ATCM) to Reduce Emissions of Hexavalent Chromium and Nickel from Thermal Spraying. This regulation provides important environmental benefits by controlling emissions of highly carcinogenic hexavalent chromium and emissions of nickel, which has both carcinogenic and acute health impacts, from thermal spraying. The District supports the rule and the work Air Resources Board staff has done to develop this regulation." (SDAPCD)

Agency Response: The ARB staff appreciates the commenter's support of the ATCM.

11.3 Comment: "Thank you for the opportunity to submit comments on the proposed ATCM for Thermal Spraying. Due to the highly toxic nature of the emissions from these types of operations, as well as the fact they are sometimes located in residential communities of color, adoption of this ATCM will be very important to public health. Center for Community Action and Environmental Justice, Communities for a Better Environment, Environmental Health Coalition, and Silicon Valley Toxics Coalition, are very supportive of the adoption of this ATCM. However, there are also several amendments to the regulation, which would make it stronger and more effective." (CCAEJ, CBE, EHC, SVTC)

Agency Response: The ARB staff appreciates the commenters' support of the ATCM. Recommended amendments were addressed in previous sections.

11.4 Comment: "The siting requirement for new sources is a critical first step towards addressing underlying land use problems with these facilities. We are very supportive of the requirement that new facilities be located at least 500 feet from existing sensitive receptors. We commend staff for again placing ARB in the forefront of protection of public health in this manner. Unfortunately, local land use practices still place homes and schools dangerously close to heavy industry, and vice versa. For this reason, several of our organizations have participated with ARB staff in developing the Air Quality and Land Use Handbook, which we hope will become an important tool

for land use planners in the future. In the meantime, it is critical that, when ARB has information that is important for siting purposes for facilities with air toxics emissions, that information must be reflected in the ATCM regulations for those sources. ARB cannot assume that land use planners will be able to accurately assess the potential impacts from these types of sources, and the local air districts do not assert their authority to deny permits to sources that may be located inappropriately if they otherwise comply with air district regulations.

Additionally, it is very important that siting problems be addressed at a policy level, such as in this ATCM, instead of on a case-by-case basis. Land use agencies and local air districts simply do not have the resources to assess the impacts of proposed new sources on a case-by-case basis. Moreover, the industry groups themselves often ask for "regulatory certainty" as to how the regulations will apply to them. This siting requirement will provide that certainty for new facilities. Furthermore, even though the science of emissions estimation, toxicity of compounds, and health risk assessment continues to develop, health risk assessments for sources immediately adjacent to sensitive receptors are, at best, educated guesses about the impacts. This was proved no more starkly than in the case of Master Plating in Barrio Logan, where a health risk assessment performed in 1994 by the Air Pollution Control District estimates a cancer health risk of one per million, while subsequent ARB monitoring showed a health risk of over 100 cancers per million.

For these reasons, it is vital that the siting requirement remain in the ATCM, and that it is set at a level which is protective of public health, even for the largest facilities. We urge ARB to retain in the ATCM a distance parameter that is both based upon known science, and includes a precautionary factor, to take into account the scientific uncertainties discussed above. We believe that at this time, the 500-foot distance parameter is sufficient to accomplish this purpose. As knowledge about these facilities continues to improve, the distance parameter may need to be adjusted to further protect public health." (CCAEJ, CBE, EHC, SVTC)

Agency Response: The ARB agrees that the 500-foot distance parameter is protective of public health and should be retained in the ATCM.

11.5 Comment: "South Coast Air Quality Management District (SCAQMD) supports the adoption of the proposed Airborne Toxic Control Measure (ATCM) to reduce emissions of hexavalent chromium and nickel from thermal spraying operations. SCAQMD staff has worked with CARB staff during this rule development process. CARB staff has been very responsive to our comments and suggestions during this process." (SCAQMD)

Agency Response: The ARB staff appreciates the commenter's support of the ATCM.