

## I. CASE OVERVIEW:

### A. Chemical Overview

The following active ingredients are covered by this Reregistration Eligibility Decision:<sup>1</sup>

Active Ingredient(s): <sup>2</sup>	CAS Registry Number:	OPP Chemical Code:	Empirical Formula:	Molecular Weight:	Common Chemical Name:
Arsenic Acid	7778-39-4	006801	H <sub>3</sub> AsO <sub>4</sub>	141.93	Orthoarsenic Acid (o-Arsenic Acid)
Arsenic Pentoxide	1303-28-2	006802	As <sub>2</sub> O <sub>5</sub>	229.82	Arsenic Acid Anhydride
Chromic Acid	7738-94-5	021101	CrO <sub>3</sub>	100.01	Chromic Acid Flake; Chromium Trioxide
Sodium Dichromate	10588-01-9	068304	Na <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> ·2H <sub>2</sub> O	298.05	Chromic Acid, Disodium Salt

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<sup>1</sup> Inclusive of arsenic or chromium pesticide chemicals used in the following wood preservative formulations: Chromated Copper Arsenate (CCA), Ammoniacal Copper Zinc Arsenate (ACZA), Ammoniacal Copper Arsenate (ACA) and Acid Copper Chromate (ACC).

<sup>2</sup> Active ingredients listed as arsenic or chromium compounds are those currently supported for reregistration as wood preservatives under Reregistration Case 0132. This case was previously identified as "Chromated Arsenicals" in OPP's Spring 1998 "Status of Pesticides in Registration, Reregistration, and Special Review (Rainbow Report)" and included the following additional active ingredients which are currently cancelled and therefore no longer eligible for reregistration review:

Sodium arsenate (013505) - cancelled 2004;  
Potassium dichromate (068302) - cancelled 2000;  
Sodium pyroarsenate (013401) - cancelled 1991; and  
Sodium chromate (068303) and Ammonium arsenate (013601) - cancelled 1987.

An arsenic compound which is outside the scope of this Reregistration Eligibility Decision (RED) document is Arsenic trioxide (007001) which is currently registered as an insecticide for use in ant bait products and therefore not a wood preservative. The technical chemical and end-use product registrations are managed by OPPs Registration Division (RD), within the Insecticide-Rodenticide Branch. The Antimicrobials Division (AD) will work jointly with RD on the reregistration requirements for this chemical.

Cupric Oxide, the form of Copper used in the treatment solutions for the wood preservatives containing arsenic and/or chromium, is not included as an active ingredient covered under this RED. Reregistration requirements for Cupric Oxide will be addressed separately in a RED document for Copper, and oxides, Case Number 4025, slated to be issued at a future date. Similarly, zinc oxide, the form of zinc used as an active ingredient in the formulations of ACZA is not included in this RED because it has been addressed in the RED for zinc salts (EPA-738-F-92-007, August, 2002).

• Chemical Group:	Inorganic Arsenicals and Chromium compounds	
• Case Number:	0132	
• Basic Manufacturers:	<u>Primary Registrants</u>	<u>Total Number of Registered Products</u>
	<b>American Chrome &amp; Chemical LP</b>	<b>1</b>
	<b>Arch Wood Protection, Inc.</b>	<b>5</b>
	Chemical Specialties, Inc.	5
	Elementis Chromium LP	1
	J.H. Baxter	1
	Osmostone, Inc.	9
	Phibro-Tech, Inc.	1
	<b>Total Registered:</b>	<b>23 products</b>

## B. Use Profile

The following is a profile of the currently registered uses of arsenical and/or chromated wood preservatives.

Type of Pesticide: Fungicide, Insecticide, Miticide and Molluscicide

Use Sites: Arsenic and chromium compounds used as wood preservatives are Restricted Use Pesticides specified for commercial pressure treatment applications only (i.e., impregnated into forest products using a vacuum pressure system).

Terrestrial Non-Food Crop:  
(Utility Poles, Cross Ties, Timbers, Posts, Lumber)

Wood Protection Treatment to Forest Products by Pressure:

- Wood Protection Treatment to Forest Products (Seasoned)
- Wood Protection Treatment to Forest Products (Unseasoned)
- Pesticides for Manufacturing, Reformulating or Repackage Use
- Pesticide Products for Formulation of Other Products
- Pesticide Products for Tank Mixes

Aquatic Non-Food Outdoor:  
(Piles/Posts/Timbers used for Aquatic Structures)

Wood Protection Treatment to Forest Products by Pressure:

- Wood Protection Treatment to Forest Products (Seasoned)
- Wood Protection Treatment to Forest Products (Unseasoned)

Residential and Farm Indoor/Outdoor:

(Groundline-contact Building Components, Structural Support Timbers)

Wood Protection Treatment to Forest Products by Pressure:

- Wood Protection Treatment to Forest Products (Seasoned)
- Wood Protection Treatment to Forest Products (Unseasoned)

Target Pests:

Invertebrates: (Insects, Miscellaneous Invertebrates, and Related Organisms.)

- Wood Boring Insects
- Termites
- Ants
- Carpenter Ants
- Marine Borers (Limnoria & Teredo)

Plant Pathogenic Organisms: (Bacteria, Fungi, and Other Fouling Organisms.)

- Ascomycetes
- Wood Rot/Decay
- Wood Rot/Decay Fungi
- Wood Rot/Decay Fungi (Spores)
- Dry Rot
- Brown Rot
- White Rot

Formulation Types Registered:

At present there are a total of **23** products registered with the U.S.EPA for wood preservation, containing the active ingredients arsenic and or chromium, as follows:

Sources of Chromic Acid:

Technical Grade Active Ingredient (TGAI):

Crystalline Flakes (OPP Chemical Code 021101)	98.7 % - 100 %	(5 products)
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Industrial End-Use Product (EUP):

Liquid (OPP Chemical Code 068304)	70%	(1 product)
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Sources of Arsenic Acid:

Manufacturing-Use Product/Formulator-Use Product (MUP):

Formulation Intermediate (Liquid) (OPP Chemical Code 006801)	75%	(2 products)
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Industrial End-Use Product (EUP):

Liquid (OPP Chemical Code 006801)	75%	(3 products)
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Formulated Mixtures of CCA:

Industrial End-Use Product (EUP):

Soluble Concentrate (Liquid) (OPP Chemical Codes 021101 & 006802)	40% - 72%	(11 products)
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Formulated Mixture of ACC:

Industrial End-Use Product (EUP):

Soluble Concentrate (Liquid) (OPP Chemical Code 021101)	50%	(1 product)
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(Total 23 products)

Types and Rates of Application: The following covers application types and rates specified on the product labeling, or derived from information provided by industry sources [i.e., the American Chemistry Council (ACC) Arsenical Task Force members, and the American Wood-Preservers' Association (AWPA) 2001 Book of Standards].

Terrestrial Non-Food Crop

Wood Pressure Treatment to Forest Products:

- Nonsoil Contact Nonfumigation
- Soil Contact Nonfumigation
- Vacuum Pressure System Wood Protection Treatment

Types of Treatment: Pressure Treatment; Vacuum Pressure Treatment.

Equipment: Pressure Treating Cylinder/Vessel/Retort.

Timing: Prior to end use of wood.

Use Rate: Pressure treatments conducted as specified by the AWWPA Standards for wood treaters. For waterborne preservatives such as Chromated Copper Arsenate (CCA), Ammoniacal Copper Zinc Arsenate (ACZA), Ammoniacal Copper Arsenate (ACA) and Acid Copper Chromate (ACC):

**AWPA Preservative Retention Requirements for Southern Pine:<sup>1</sup>**

<u>Use Application for Wood Treated with CCA, ACZA, ACA, and ACC</u>	<u>Retention (lb/ft<sup>3</sup>)</u>
Above ground lumber/timbers	0.25
Ground contact/Fresh water contact lumber/timbers	0.40 (0.50 for ACC)
Salt water splash contact/Permanent wood foundation/Structural poles (utility poles) <sup>2</sup>	0.60
Fresh water foundation piles <sup>2</sup>	0.80 - 1.00
Salt water immersion marine piles <sup>2</sup>	2.50

<sup>1</sup>Retention levels are specified on an oxide basis.

<sup>2</sup>Treatment with ACC not recommended for this use application.

**C. Estimated Usage of Pesticide**

This section summarizes the best estimates available for the wood preservatives containing arsenic and/or chromium. These estimates are derived from a variety of published and proprietary sources available to the Agency.

Technical sources of Arsenic used as wood preservatives are derived from Arsenic trioxide imported principally from China to produce Arsenic acid for formulation of CCA and related arsenicals. About 90% of all arsenic consumed is for the production of wood preservatives (U.S. Geological Survey, Mineral Commodity Summaries, 1997). Statistics indicate that wood preservatives make up 72% of the Chromic acid market (Chemical Market Reporter, 2000).

According to EPA sources, the most common of the waterborne preservatives is CCA (as Type C containing 47.5% chromium, 18.5% copper, and 34% arsenic) which by the mid-1990's represented 90% of the U.S. waterborne preservatives market. Market statistics for 2002 indicated that there were close to 350 wood treatment plants in the US that used CCA. The U.S. consumed 71,700 metric tons of CCA in 1999 (Chemical Market Reporter, 2002). In 1996 the total volume of CCA-treated wood products was estimated at 467 million cubic feet. (American Wood Preservers Institute, 1996).

**D. Data Requirements**

The Agency required registrants to submit studies in response to Registration Standards issued in 1986 and 1988 (PB87-114088, and PB89-102842) for chromated arsenical compounds.

Data from submitted studies along with more recent industry-sponsored studies were used to characterize the risks associated with the uses described in this document.

### **C. Regulatory History**

The wood preservative pesticides containing arsenic and/or chromium compounds are registered as technical source/manufacturing-use products or formulated industrial end-use product concentrates or mixtures intended for aqueous dilution to form CCA, ACZA, ACA and ACC treatment solutions. Formulated wood preservative products containing arsenic and/or chromium compounds have been registered since the 1940's when pesticides were under the regulatory purview of the United States Department of Agriculture (USDA), and since its' inception in the 1970's, regulated under FIFRA with the U.S. EPA. Presently, 23 products are registered for pressure treatment of wood intended for above ground and ground contact, as well as in fresh water and marine environments. Wood treated with these preservatives are specified for commercial, institutional, and limited residential/farm construction uses in indoor and outdoor sites. All 23 products are *Restricted Use Pesticides*; 5 are **technical chemical sources of** Chromic acid, 2 are manufacturing-use product sources of Arsenic acid; 4 are industrial end-use product sources of either Chromic acid or Arsenic acid, and 11 are industrial end-use product mixtures of CCA, and 1 is an industrial end-use product mixture of ACC.

In October of 1978 the Agency initiated an administrative review process by issuing notices of "Rebuttable Presumption Against Registration (RPAR)" to consider whether the pesticide registrations of chromated and non-chromated arsenical wood preservatives should be cancelled or modified due to toxicological effects attributed to the pesticides. The Federal Register Notice (Vol.49, No.136) of July 13, 1984 concluded the RPAR process and announced that certain changes in the terms and conditions of registration were required if registrants and applicants wished to avoid cancellation (see "RPAR Settlement Use Conditions" below).

EPA evaluated the potential risks of these wood preservative chemicals to public health, along with the significant economic benefits resulting from their use. The Agency subsequently determined that the use of these wood preservative chemicals in accordance with certain modifications to the terms of registrations would satisfy the statutory standard for products' registration. Details of the modifications as stated below are in the Federal Register of January 10, 1986 (Vol.51, No. 7) and January 21, 1987 (Vol.52, No.13).

#### **RPAR Settlement Use Conditions:**

- Arsenical and/or chromated wood preservatives are now classified as "RESTRICTED USE" pesticides, meaning that these chemical are for sale and use only by certified applicators or persons under their direct supervision and only for those uses covered by the applicator's certification. The product labeling includes some of the following statements:

"RESTRICTED USE PESTICIDE-- For Sale to and Use By Certified Applicators ..."

“RESTRICTED USE PESTICIDE--Due to Acute Toxicity and Because This Product Contains Arsenic and/or Chromium Compounds Some Types of Which Have Been Associated with Tumor Development in Humans.”

“Do not apply in interiors. Do not apply to wood intended for use in interiors except for those support structures which are in contact with the soil in barns, stables and similar sites and which are subject to decay or insect infestation . . .”

- Protective clothing requirements for workers must be specified on labels.
- All exposed arsenic treatment plant workers are required to wear a respirator if the level of ambient arsenic is unknown or exceeds a Permissible Exposure Limit (PEL) of 10 ug/m<sup>3</sup> averaged over an 8-hour work day.
- Manufacturers and formulators must use a closed system for mixing powdered inorganic arsenicals.
- Applicators may not eat, drink, or use tobacco products during the application process. Applicators must also wash thoroughly after skin contact with the pesticide.
- A Consumer Awareness Program was instituted requiring wood pressure-treaters to provide Consumer Information Sheets to all lumber yards and other retailers. The information sheets instruct consumers about handling procedures, such as the use of protective gloves, coveralls and face masks when sawing treated wood products.

EPA has required specific labeling use instructions for arsenical and/or chromated wood preservative end-use products. These instructions require the use of diluted solutions (0.5 - 10%) only in closed, vacuum-pressure cylinders. Industry treatment standards must be strictly adhered to in order to minimize worker exposure and environmental contamination.

The following precautions for working with wood treated with arsenic and/or chromium-based preservatives resulted from the special review and are included on the Consumer Safety Information Sheets, which should be available at all establishments where arsenical and/or chromated wood preservative- treated wood can be purchased. These efforts are especially important when conducting activities that generate sawdust from treated wood, since there is a greater likelihood of exposure to arsenic and/or chromium from such activities than there is from ordinary contact to wood surfaces.

- Consumers working with arsenic and/or chromium-treated wood should wear long-sleeve shirts, long pants, and gloves impervious to the chemicals, such as vinyl-coated gloves.
- If sawdust accumulates on clothes, wash them separately from other household clothes before reuse.

- Avoid frequent or prolonged inhalation of sawdust from treated wood. Wear a dust mask when sawing and machining. Always wear goggles to protect your eyes from flying particles when power-sawing and machining.
- If possible, work outdoors to avoid indoor accumulation of sawdust from treated wood.
- Wash exposed body areas thoroughly with soap and water after working with treated wood. Clean-up thoroughly before eating, drinking or using tobacco products.

**In December, 2001 four registrants of CCA informed EPA of their individual decisions to voluntarily phase-out virtually all residential uses of CCA by December 31, 2003, in favor of new alternative wood preservatives. The Agency in a Federal Register notice of February 22, 2002 (Vol 67, No 36), announced the receipt of the voluntary requests from the registrants to cancel two CCA products and amend the registrations of seventeen CCA products to terminate certain uses, pursuant to section 6(f)(1) of FIFRA. Another notice was issued (67 FR 13328, March 22, 2002) to extend the comment period until April 9, 2002.**

The registrants promised to phase out all uses of CCA-products with the exception of the treatment of wood products that fall under the American Wood-Preservers' Association (AWPA) standards (based on the 2001 edition of the AWPA Standards) listed in the text of the approved label amendment. The phase out of uses affected virtually all residential uses of wood treated with CCA including wood used in play structures, decks, picnic tables, landscaping timbers, gazebos, residential fencing, patios, walkways, boardwalks, etc.

In response to the Agency's solicitation for public comments, approximately 6,700 comments were submitted by the wood preservative industry, the chromium industry, the lumber industry, the agricultural industry, Kentucky and Texas State government officials, federal government officials, environmental groups, businesses and private citizens of Corpus Christi, Texas, as well as from others. A number of comments were received for uses which the commenters believed posed no or little risk of exposure to the public including the use on fence posts in agricultural settings.

On April 9, 2003, the Agency published its response to the use terminations and products cancellations voluntarily requested by the registrants in the federal register (68 FR 17366, Vol 68, Number 68). Rather than delay acceptance of portions of the requests until completion of the reregistration review, EPA decided to accept the requests for cancellation/use termination for all other uses and defer action with respect to the requests to terminate agricultural fence post and permanent wood foundation uses pending the complete evaluation of these uses through the reregistration process.

Specifically, the notice announced the cancellation of the two affected products, effectively March 17, 2003, the date upon which the Agency signed and issued the cancellation order.

Registrants were allowed 60 days thereafter (until May 16, 2003) in which to sell or distribute the cancelled products concerned, and to revise the labels for other products with use terminations, effective as of May 16, 2003. In addition to stating the Agency's response to the requests, the notice also addressed the considerable number of comments received in response to the Agency's requests for public comments on the registrants' requests.

As per the Federal Register Notice (68 FR 17366, Vol 68, Number 68) the following statements have been stipulated as label amendments for affected MUP's as arsenic source products:

“Effective December 31, 2003, this product may only be used (1) for formulation of the following end-use wood preservative products: ammoniacal copper zinc arsenate (ACZA) or chromated copper arsenate (CCA) labeled in accordance with the Directions for Use shown below, or (2) by persons other than the registrant, in combination with one or more other products to make: ACZA wood preservative; or CCA wood preservative that is used in accordance with the Directions for Use shown below.

Effective December 31, 2003, this product may only be used for preservative treatment of the following categories of forest products and in accordance with the respective cited standard (noted parenthetically) of the 2001 edition of the American Wood-Preservers' Association Standards: Lumber and timber for Salt Water Use Only (C2), Piles (C3), Poles (C4), Plywood (C9), Wood for Highway Construction (C14), Round, Half Round and Quarter Round Fence Posts (C16), Poles, Piles and Posts Used as Structural Members on Farms and Plywood Used on Farms (C16), Wood for Marine Construction (C18), Lumber and Plywood for Permanent Wood Foundations (C22), Round Poles and Posts Used in Building Construction (C23), Sawn Timber Used to Support Residential and Commercial Structures (C24), Sawn Crossarms (C25), Structural Glued Laminated Members and Laminations Before Gluing (C28), Structural Composite Lumber (C33), and Shakes and Shingles (C34). Forest products treated with this product may only be sold or distributed for uses within the AWPA Commodity Standards under which treatment occurred.”

As per the Federal Register Notice (68 FR 17366, Vol 68, Number 68) the following statements have been stipulated as label amendments for affected EUP's:

“Effective December 31, 2003, this product may only be used for preservative treatment of the following categories of forest products and in accordance with the respective cited standard (noted parenthetically) of the 2001 edition of the American Wood-Preservers' Association Standards: Lumber and timber for Salt Water Use Only (C2), Piles (C3), Poles (C4), Plywood (C9), Wood for Highway Construction (C14), Round, Half Round and Quarter Round Fence Posts (C16), Poles, Piles and Posts Used as Structural Members on Farms and Plywood Used on Farms (C16), Wood for Marine Construction (C18), Lumber and Plywood for Permanent Wood Foundations (C22), Round Poles and Posts Used in Building Construction (C23), Sawn Timber Used to Support Residential and Commercial

Structures (C24), Sawn Crossarms (C25), Structural Glued Laminated Members and Laminations Before Gluing (C28), Structural Composite Lumber (C33), and Shakes and Shingles (C34). Forest products treated with this product may only be sold or distributed for uses within the AWWA Commodity Standards under which treatment occurred.”

In a letter to the Agency (dated February 7, 2003), Osmose, Inc. and Osmose Utilities Services, Inc. requested the voluntary cancellation of the registration for the three non pressure-treated uses of CCA products. Following the announcement of the “notice of receipt of request to voluntarily cancel certain pesticide registration” (68 FR 18635, April 16, 2003) with a 30 day comment period, orders were issued by the Agency granting the cancellation of the three products, effective May 28, 2003.

The Agency in its letter of June 19, 2003, informed Osmose, Inc. (the sole registrant of Acid Copper Chromate -ACC) of the absence of data necessary to support the continued registration of ACC 50% (the only registered ACC product), and outlined the data-gaps required for reregistration. ACC contains no arsenic but does have approximately 50 percent more chromium (hexavalent) than formulations of CCA. Due to the extensive time and technical resources that would be needed to fulfill the data-gaps, Osmose, Inc. decided to no longer support the registration of the product, and submitted a request (June 30, 2003) for voluntary cancellation.

Osmose has not sold this product for the last two years and prior to that time, its only use was on wood for cooling towers. Based on the receipt of this request, the Agency has not specifically assessed the risks associated with ACC in this RED. The Agency has however, received “me-too” applications from two applicants for ACC products. A decision has been made to not act on the Osmose voluntary cancellation until such time that a decision on the “me-toos” is made. The Agency has concerns about the increased amount of hexavalent chromium in ACC and has informed the “me-too” applicants that it needs additional data/information before it can accurately assess the potential risks associated with this chemical’s use. Consequently, an assessment for ACC is not included in this RED document but will be separately addressed in the Agency’s revised risk assessment, should the Agency make the decision to grant these applications.