AS/NZS 4361.1:2017

Australian/New Zealand Standard™

Guide to hazardous paint management

Part 1: Lead and other hazardous metallic pigments in industrial applications

STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

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The following are represented on Committee CH-003:

Australasian Corrosion Association
Australian Institute of Building
Australian Paint Manufacturers Federation
Australian Wall and Ceiling Association
CSIRO
Institution of Professional Engineers New Zealand
Master Painters Australia
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH-003, Paint and Related Materials, to supersede AS 4361.1—1995, *Guide to lead paint management* Part 1: *Industrial applications.*

This Standard is Part 1 of the series of two parts providing guidance on the management of paints containing lead and other hazardous metallic pigments. The second part covers lead paint in residential, public and commercial building applications.

As part of the 2017 revision, the scope of this Standard has been widened to include other toxic metallic compounds (e.g. zinc chromate, arsenic and cadmium) that have at times been used in paints, in addition to lead, which was covered exclusively in the previous edition. Although the controls for most of these other toxicants are similar to those used to manage lead in paint, there are specific differences in toxicology and environmental impact that may require modifications to the general procedures of this Standard.

The objective of the Standard is to provide guidelines for the successful management of the disturbance or removal of paints containing hazardous metallic pigments used on industrial steel structures. This document may be referred to in state legislation dealing with the treatment of hazardous paints. However, when preparing for projects that involve the disturbance or removal of hazardous paints, the assistance of suitable experts is necessary.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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FOREWORD

Metallic pigments form the basis of most anti-corrosive primers and some decorative paints.

Lead in the form of its various oxides or salts (i.e. inorganic lead) has been used as a key ingredient in industrial paints for more than 100 years due to its excellent ability to protect steel from corrosion and to provide strong, durable colours with excellent resistance to ultaviolet light. Lead primers were found to need minimal surface preparation and consequently were employed for protective treatment of complex steel structures, particularly where difficulties of access and steelwork geometry prevented optimum surface preparation of the steelwork prior to painting. Lead salts in the form of lead sulfochromate pigments have been used in industrial finishes to produce strong yellow, orange and red colours due to the versatility and low cost of these pigments.

The widespread use of lead paints continued until the early 1980s, when concerns about lead-based paint toxicity and the advent of less toxic protective coating systems significantly reduced their usage. Many industrial structures throughout Australia are painted with lead paint systems and, while these systems remain intact, they present no significant health hazard or environmental pollution hazard. However, in most instances these systems will require repair or replacement during the design life of the structure, and the owners will be confronted with potential health and environmental pollution hazards associated with lead paint removal during the course of surface preparation for painting.

Chromium was also widely used in the latter part of the 20th century in the form of zinc chromate (chromium VI or hexavalent chromium), a popular and highly effective anti-corrosive pigment. Zinc chromate primers were used extensively on steel structures and in shipping applications and can be identified through sampling and testing. Chromate has adverse health impacts on the skin and internal membranes and is a known human carcinogen.

Arsenic and cadmium have been used in coloured pigment manufacture mainly in greens and yellows. Each has its own toxicity to humans and presents environmental risks. Although their presence is rare on industrial structures or infrastructure, if suspected, testing should be carried out to identify hazards.

Many structures (e.g. bridges) are located in congested urban areas where hazardous paint removal operations may contaminate nearby residences, business properties or playgrounds. Other structures are located in rural settings where grazing or recreational areas in the vicinity of the structure may be contaminated. Pollution of soil and waterways from hazardous paint removal operations is of concern to environmental protection agencies who require all works to be carried out in accordance with current regulations.

There is a need for sound management of hazardous paint coatings on structures. This Standard addresses the issues critical to management of the selection and implementation of practical, cost-effective maintenance programs that minimize health hazards to workers and the public, and pollution hazards to the environment.

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1 SCOPE

This Standard provides guidance on the management of lead-based paints and other hazardous paints (e.g. paints containing zinc chromate and other chromate-based materials, arsenic compounds or cadmium compounds). Risk management is also covered as a tool for developing controls for the identified hazards.

This Standard applies to the management of hazardous paints on industrial structures. It includes methods for determining whether hazardous metallic pigments are present on a structure and the selection of a maintenance strategy. Guidance is given on implementing emission controls during paint removal to ensure that potential health risks to workers and the public are reduced to an acceptable level, environmental pollution regulations are observed and a method of handling hazardous waste is selected which meets governing legislation.

For legal obligations associated with managing lead-based and other hazardous paints, refer to work health and safety (WHS) regulatory requirements.

2 APPLICATION

Clause 5 provides information on small paint removal projects, which may not require the full application of this Standard.

Clauses 6 to 21 provide a step-by-step guide that defines the decision path to management of the removal of hazardous paints.

The Appendices A to L provide guidance on a range of topics that enable the application of the decision path approach.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1324	Air filters for use in general ventilation and airconditioning (series)
1627	Metal finishing—Preparation and pre-treatment of surfaces
1627.2	Part 2: Power tool cleaning
1627.4	Part 4: Abrasive blast cleaning of steel
2106	Methods for the determination of the flash point of flammable liquids (closed cup)
2106.2	Method 2: Determination of flash point—Pensky-Martens closed cup method
3640	Workplace atmospheres—Method for sampling and gravimetric determination of inhalable dust
3894	Site testing of protective coatings
3894.3	Method 3: Determination of dry film thickness
3894.9	Method 9: Determination of adhesion