

Australian Standard[®]

Guide to lead paint management

Part 1: Industrial applications

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Australasian Corrosion Association
Australian Chamber of Commerce and Industry
Australian Paint Manufacturers Federation
AUSTROADS
Building Research Association of New Zealand
Government Paint Committee
National Association of Testing Authorities, Australia
New Zealand Manufacturers Federation
Railways of Australia Committee
Retailers Council of Australia
Surface Coatings Association Australia
Telstra Australia
Works Consultancy Services, New Zealand

Additional interests participating in preparation of Standard:

Blast Cleaning and Coating Association of N.S.W.
Department of Land and Water Conservation, N.S.W.
Environment Protection Authority, N.S.W.
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH/3 on Paint and Related Materials. This Standard is the result of a consensus among Australian and New Zealand representatives on the Joint Committee to produce it as an Australian Standard.

The objective of the Standard is to provide guidelines for the successful management of lead-containing paints on industrial steel structures, particularly when any paint removal is carried out. This document may be referred to in proposed State legislation dealing with the treatment of lead-containing paints. However, when preparing specifications for the removal of lead-containing paints, the assistance of suitable experts is necessary.

The recommendations of the Steel Structures Painting Council (SSPC) documents, Guide 6I (CON), *Guide for containing debris generated during paint removal operations*, and Guide 7I (DIS), *Guide for the disposal of lead-contaminated surface preparation debris* and other references* have been taken into account when preparing this Standard.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

* TRIMBER, K.A., *Industrial lead paint removal handbook*, Pittsburgh: KTA - Tator Inc, (Steel Structures Painting Council) 1991

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FOREWORD

Lead in the form of its various oxides has been used as a key ingredient in industrial paint primers for more than 100 years due to its excellent ability to protect steel from corrosion. These primers were found to be particularly tolerant to minimal surface preparation. Consequently, lead primers 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. Further, lead in the form of yellow chrome and orange chrome pigments has 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.

Particular compounds of lead which were widely used in Australia on outdoor steel installations were the oxide (red lead), lead chromate and lead silico-chromate and, for galvanized steel, calcium plumbate. Calcium plumbate-in-oil primers were applied by brush to galvanized or zinc-sprayed steel to allow the retention of alkyd enamels. Red lead-in-oil primers were used because of their easy brush application, high build and effectiveness on hand-cleaned surfaces. Red lead-lead chromate primers, in oil or in alkyd and other binders, were considered to have superior corrosion inhibition on such surfaces. Traditionally these products contained at least 10 percent lead in the dry film of paint. A lower level of 1.0 percent (w/w) lead has been selected in this guide to define a lead-containing paint for which these procedures are recommended.

Lead in any form is toxic to humans when ingested and inhaled. In many cases the most cost-effective method of surface preparation for maintenance painting can involve the partial or complete removal of existing coatings by mechanical means which pulverize the paint into small particles that may be readily inhaled or ingested. Repeated inhalation or ingestion of lead-containing paint particles may produce the cumulative effects of lead poisoning (plumbism). A lesser intake may adversely affect a child's mental and emotional development. Thus, these methods give rise to two potential health problems, i.e. inhalation and ingestion of lead paint by the workers and public in the vicinity of the structure, and the deposition of lead paint particles on nearby footpaths, streets or soil where they may be resuspended, tracked into houses or buildings inhaled or ingested. In most instances workers may be simply and easily protected by protective equipment, and the public by preventing access to the work site; however, lead paint deposition may be much more complex and difficult to manage depending on the size, shape and location of the structure.

Many structures such as bridges are located in congested urban areas where 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. Further, most government regulatory bodies perceive lead paint pollution of soil and waterways to be a concern and direct its control.

There is a need for sound management of lead-containing paint coatings on structures. This Standard addresses the issues critical to such management for the purpose of facilitating selection and implementation of practicable, cost-effective maintenance programs which minimize health hazards to workers and the public, and pollution hazards to the environment.

In the absence of definitive local legislation dealing with the removal and treatment of lead-containing paint, the concept of properly managing a structure coated with lead-containing paint by means of the decision path and much of the information detailed in this Standard has been sourced from an overseas consultant to the Roads and Traffic Authority of New South Wales. Presenting these guidelines in this format facilitates consideration of all those aspects which are critical to the successful management of lead-containing paint. The practices and procedures detailed for completing each step of the decision path may require modification to accommodate different structures, locations and legislation; nevertheless, a mechanism for the proper management of industrial structures coated with lead-containing paints is documented.

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1 SCOPE This document provides guidance for the management of lead-containing paint on industrial structures. It provides information on methods for determining whether lead is present on a structure and on the selection of an appropriate maintenance strategy. Guidance is given on implementing appropriate lead paint emission controls during paint removal to ensure that potential health risks to workers and 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.

Although this guide does not fully address requirements for the evaluation of worker health and safety, which should be in accordance with current regulatory requirements, it does provide guidelines to produce a safer working environment.

NOTE: These procedures may also be suitable for the management of hazardous coatings other than lead-containing paints, such as paints based on zinc chromate and other chromate-based material. Testing which reveals an absence of lead-containing paint on an industrial structure is not in itself justification for ignoring these procedures. The stress upon 'lead-containing' paints is occasioned by concern to reduce all forms of lead in the environment.

2 APPLICATION The successful management of an industrial structure coated with lead-containing paint requires consideration of the function, design life and service environment of the structure, condition of the existing coating system, coating systems which will be effective in the service environment, hazards associated with lead paint removal to workers, public and the environment and program cost. These factors and their many intertwined elements need to be judiciously dealt with in a logical and systematic manner for satisfactory painting program selection and implementation to take place. Thus, these guidelines are presented in the form of a decision path that may be used by an owner of an industrial structure painted with lead paint to manage the maintenance of that structure.

In some instances, the amount of lead residues produced during a paint removal project may be of such a low magnitude that it may be possible to reduce the level of control, either in monitoring or containment, after assessment of the risk (see Clause 9).

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

3 REFERENCED DOCUMENTS

AS

1324	Air filters for use in air conditioning and general ventilation
1580	Paints and related materials—Methods of test
1580.408.2	Method 408.2: Adhesion—Knife test
1580.408.5	Method 408.5: Adhesion—Pull-off test
1580.481.1.1	Method 481.1.1: Coatings—Exposed to weathering—General appearance
1580.481.3	Method 481.3: Coatings—Exposed to weathering—Degree of corrosion of coated metal substrates
1580.501.1	Method 501.1: Soluble lead content



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