



CHEMISTRY  
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### **Suggested Procedure to Remove Lead Contamination from Roofs.**

Roof cleaning need not be attempted unnecessarily. It is important that all safety precautions are complied with and understood before attempting to clean dust affected roofs. Extra caution needs to be exercised when using water and detergent on roofs that are likely to already pose a significant fall hazard.

The following is a recommended best practice procedure based on knowledge of the problem in Esperance, an understanding of the chemistry of lead and its compounds in the environment and via referral to the references listed below.

As the material, age and building design together with the extent of the lead contamination will be different for each roof the following procedure is a best attempt to cover all likely situations. The suggested cleaning method is a guide only. If you have any doubt about the applicability of these circumstances to your roof, contact your local authority or the Department of Health for specific advice.

The primary objective is to eliminate the vector by which lead might be washed into rainwater tanks. Hence only that part of the roof which provides the catchment for the rain water needs to be cleaned. This of course would include neighbouring sections of roof if they share the same outflow or drainpipe. If you suspect that the lead contamination on your roof may be more extensive, cleaning the entire roof by this procedure may be warranted.

The use of detergent is to aid removal of the lead dust by removing any normal grime (e.g. from vehicle exhaust, natural dust and debris materials, etc) that may occur and provide a surface on which the lead may adhere. Special detergents (including those that claim to be specifically for lead removal) are not warranted. Common household detergent has been found to be equally effective in lead dust removal. The use of more corrosive solutions or lead-chelating agents is not recommended.

Swab samples, taken from the roof surface (in accordance with the recommended practice) before and after cleaning may provide a quantitative measure of the effectiveness of the cleaning.

**Note: Under no circumstances should pressure cleaning be undertaken on any asbestos roof. This is a dangerous and illegal procedure. Any cleaning of asbestos must be carried out by a licensed operator.**

### Suggested safety requirements:

- Disposable coveralls. These should be disposed of later by firmly wrapping in paper and placing in the rubbish bin.
- Dust mask (P1 or P2 rating)
- Disposable gloves
- Disposable boots are preferable. Rubber Wellington boots or boots which can be washed afterwards are also acceptable.
- Safety harness and restraint

### Other Equipment

- Ladder
- Pressure hose
- Detergent Solution
  - ◆ General household detergent is suitable. Mix the detergent in solution at a rate of about 5% (e.g. 50mL per litre or 2 cups of detergent to a 10L bucket).
- Bucket for mixing detergent
- Container for collecting wash water
- Plastic sheet and adhesive tape to cover some areas if required.

### Procedure.

1. Disconnect or divert the inlet pipe away from the rainwater tank to a suitable alternate container or tank (fitting of a diverter makes this a very simple task)
2. Visually inspect the roof for potential problems such as cracked or loose tiles or sheets, damaged ridge capping or other potential problems. These should be repaired as part of normal household maintenance (or at least covered with plastic sheeting during the roof cleaning).
3. Cover any roof vents, air conditioner inlets or chimneys if they are nearby and likely to be a vector for the ingress of airborne lead during the cleaning.
4. Let your neighbours know that you are cleaning your roof so that they can stay inside, away from any overspray during the cleaning. Similarly ensure that the occupants of your house (including pets) are not in the vicinity (outside) during the cleaning operation.
5. Working from the highest point of the roof downwards, spray the detergent solution liberally onto all surfaces of the roof, adjoining flashing and gutters. Pay particular attention to areas that may accumulate dust and particulate material such as valleys and gutters. Avoid spraying 'against the flow direction' of the tile or roofing material or leaks may be experienced.
6. When the entire surface has been liberally coated with detergent solution re-spray the roof (using high pressure) with fresh water. The roof should be sprayed with water until the foam from the detergent is no longer persists.

7. The water collected from the cleaning operation can be disposed of in the same way as the contaminated tank water.

References:

1. Lewis, R.D., Sridhar, C., Batek, J., *et al.* "Removal of Lead Contaminated Dusts from Hard Surfaces." *Environ, Sci. Technol.*, **40** (2), 590-594, 2006.
2. USEPA, Laboratory Study of Lead-Cleaning Efficacy. March 1997, EPA-747-R-97-002. <http://epa.gov/oppt/lead/pubs/clean.htm> (last updated 3/8/07)
3. Rich, D.Q., Rhoads, G.G., Lih-Ming, Y. *et al.* "Comparison of Home Lead Dust Reduction Techniques on Hard Surfaces: The New Jersey Assessment of Cleaning Techniques Trial." *Environmental Health Perspectives*. **110** (9), Sept 2002, pp 889-893.

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