

## Exposure to Lead

An Article taken from The Association for Project Safety Newsletter No 62 May 2008

A study by the Institute of Occupational Medicine has shown that direct skin contact with new or old lead sheet poses no danger to health. The study was conducted to identify the risk that lead could be ingested, but tests showed that adults handling lead did not acquire enough contamination to affect their health. Further details can be obtained through the IOM at <http://www.iom-world.org/>.

However lead poisoning, a medical condition caused by excessive exposure to and absorption of lead, can occur as a result of other encounters with the metal during construction - notably when burning off old paint (that could contain lead).

Symptoms of lead poisoning are varied and can occur in other medical conditions. The symptoms of lead poisoning include neurological problems, such as fatigue, lethargy, reduced concentration, low mood, headache, irritability and insomnia.

Gastrointestinal symptoms include a bad taste in the mouth, nausea, vomiting, abdominal pain, constipation or diarrhoea. Other associated effects are anaemia, kidney problems, psychiatric problems and reproductive problems. The vast majority of individuals with blood leads above the suspension level and who are suspended from lead work do not have lead poisoning, but they are removed from further exposure to lead to prevent them developing the condition.

HSE are committed to reducing the exposure of lead and lead-based products to the workforce and more information can be found on the HSE's website.

However there are those who argue that the lack of precision of guidance and regulation relating to removal of lead paint undermines this ambition.

There is some concern that the Control of Lead at Work Regulations, 2002 (CLAW) are failing to protect those that they intend to protect, particularly in the construction industry. This is somewhat disconcerting as more than 60% of the UK'S total building stock pre-dates 1970 and the Government advises that we should assume lead paint is present in any building older than this.

Most of us are aware that lead is poisonous and that ingesting or inhaling its dust or fumes should be avoided. In practice, of course, many painters and decorators ignore the risks and often don't know how to test for lead, let alone how to comply with their statutory duties

If a painter is asked to burn off and repaint some pre-1960s windows he / she may well do the job, happy to put his blow-torch or heat gun to good use with little apparent concern about the lead fumes that may be created and inhaled. **However a 'state-of-the-art' infrared paint removal device could be used. This removes paint at a temperature of 170°C well below the threshold of 450°C above which toxic lead fumes are released from lead-based paint. [The CITB's Construction Site Safety manual (GE 700, 2007 Edition) recognizes infrared (IR) paint removal as a safe and effective method for removing lead-based paint.]**

But, unless the painter has the knowledge and understanding of the risks involved - or is given specific operation instructions - unsafe blow-torch methods may well be used - with attendant risks to painter and others. Unfortunately enforcement is almost non-existent in this area; sampling and analysis are relatively time-consuming and training can be, to say the least, uneven. So it may be up to others to make sure that safe systems of working are employed.

Lead and the Law: CLAW exists for the principal reason that lead, like asbestos, is considered to be sufficiently hazardous to need its own regulations. It applies equally to employers and the self-employed who have an obligation to protect not only themselves and their staff/sub-contractors but also third parties likely to be affected by their work with lead.

Requirements include blood testing, health surveillance, providing information and training.

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Risk Assessments: At the heart of CLAW is the need to carry out a 'suitable and sufficient' risk assessment. This is not simply to identify the presence of lead but also to quantify the amount of lead involved, presumably to indicate the likelihood of 'significant exposure' as defined in the regulations.

But herein lies a problem -there is no 'effective' Action Level for Lead in Paint.

Taking physical paint samples for laboratory analysis gives results that express the amount of lead as a percentage of the weight of the paint sample submitted.

This measure cannot be directly compared with the Occupational Exposure Limit (OEL) for lead dust in air of 0.15mg.m<sup>3</sup>, from which the definition of 'significant exposure' is derived as at, or above, 50% of the OEL (i.e. 0.075mg/m<sup>3</sup>). Nor can it be compared with the measurements for blood lead levels.

Accordingly to some specialists consider that the only way to determine the potential for significant exposure is to do a trial area big enough and for long enough to be able to take readings that are likely to produce a meaningful result. In other words - create the problem which is supposedly being avoided! Even the process of physical sampling, which is a destructive test because it damages the paint surface, leaves areas of paint likely to produce the very dust that needs to be avoided It is therefore suggested that it is difficult to carry out risk assessments that are suitable and sufficient.

### Technology to the Rescue?

However, hand-held technology, capable of hundreds of laboratory-standard readings per day, is now available for 'non-destructive' testing.

LeadSAFE, specialist lead paint safety consultants, claim to have been the UK'S first commercial users of Niton's XRF (X-Ray Fluorescent) lead analyzing technology. XRF lead analysis is the standard measurement technology used by thousands of lead paint specialists (<http://www.niton.com/>).

Not only does XRF analysis provide a high volume, quick, accurate and cost-effective alternative to physical sampling, it offers the same advantages for analysing the air filters used in air sampling for health surveillance. Traditional laboratory analysis of these filters takes at least five days – often long enough for significant lead exposure to occur before lead in air levels are actually known.

**Example:** On a tested refurbishment project 10 individual readings were taken from different elements of a single timber window and surrounding trim .The lead - in-paint levels found ranged from 0 to 5 mg/cm<sup>2</sup>. Taking one or two readings, particularly if they were at the lower/zero end of the range, could have resulted in severe lead exposure. It is hardly surprising that recent Health and Safety Laboratory (HSL) research concludes: "Window renovation is shown to present a potential for significant lead exposure, and suspension from work under The Control of Lead at Work Regulations".

Working safely with lead-based paint does not have to be reliant on the latest high tech wizardry. A more careful approach could include the use of reference and clearance testing with dust wipes.

Dust wipes can be used to take samples of airborne dust deposited on internal surfaces at the beginning and end of a project. Although the British Coatings Federation recommends 'thorough cleaning' at the end of a job involving lead-based paint there are, again, no UK standards for measuring this.

The use of dust wipes provides a straightforward way of satisfying duty of care requirements, particularly in buildings where children and pregnant women are likely to be present. At the very least they can provide proof that no more lead dust is present at the end of a job than it was at the beginning.

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In the absence of sampling and analysis, some argue that assuming lead paint is present and working accordingly is enough to comply with the regulations. However, this does not get around the need to quantify the exposure risk or the requirements, where necessary and / or appropriate, for health monitoring and surveillance.

Understanding the ins and outs of dealing with lead based paint is one aspect of Health and Safety compliance that is worth paying attention to. Lead's adverse effects can affect workers, colleagues and family and in serious cases it could prevent individuals from having a family There are, of course, also the financial implications of noncompliance.

Fines aside, the cost of litigation and associated adverse publicity are something that no business can really afford.

(This article is based on information published by LeadSafe Ltd.)