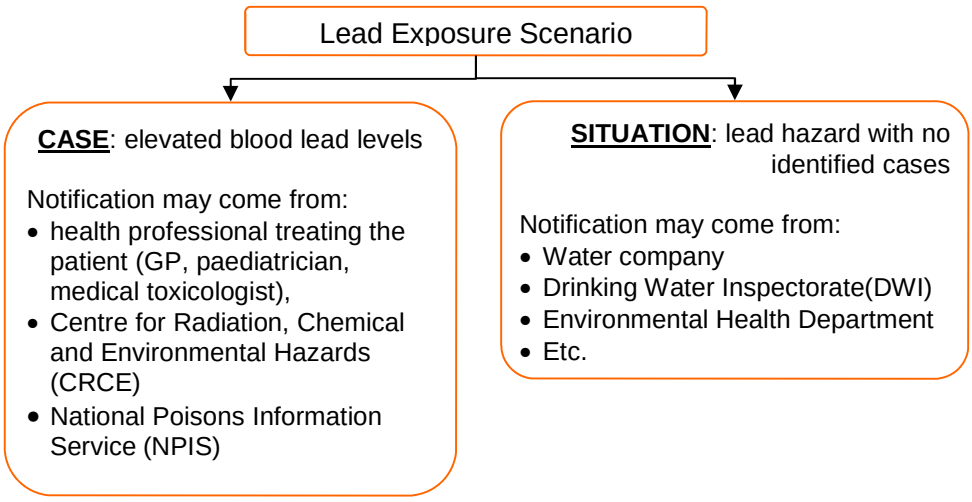
HPA Lead Action Card – Chronic exposures

This action card outlines the key actions in the response to a chronic lead exposure. The roles and responsibilities of the partner agencies are summarized in appendix 1. The HPA response has 4 key activities, which are summarized in the accompanying flowchart (appendix 2):

- Investigation of exposure – medical and environmental
- Risk assessment
- Prevention - control of the hazard
- Communication

1. Call to HPU about a possible lead incident

There are two possible scenarios:



2. Action for a case with elevated blood lead levels (>10µg/dl)

2.1. Start HPZone entry

2.2. Collect clinical data from GP/Toxicologist/laboratory

- Clinical history
- Blood lead levels –both pre and post treatment
- Request a copy of lab results/clinic letter from medical toxicologist
- Treatment planned/received, including chelation therapy

2.3. Advise clinician to liaise with NPIS if need to decide treatment regime

2.4. Complete the lead exposure questionnaire or arrange for it to be completed (appendix 3). This will help identify:

- potential source / ongoing risk for the case
- others at risk (exposed to same source)

2.5. Discuss case and questionnaire with local CRCE (Centre for Radiation, Chemical and Environmental Hazards) to complete a risk assessment:

2.5.1. Identify source

- classified as occupational, environmental or miscellaneous
- location e.g. home/school/work
- source e.g. paint/water

2.5.2. Identify route of exposure

- e.g. ingestion (of paint/water), inhalation (of paint dust)

2.5.3. Identify others at risk - pay particular attention to vulnerable groups:

- Children, especially young children with excessive mouthing or children with pica due to behavioural problems such as autism.
- Pregnant women
- Infants who are fed on formula made with affected drinking water
- Patients on dialysis

2.6. Consider a joint visit to the implicated site with environmental investigation

- aim is to obtain additional information and context to supplement the questionnaire
- suggested participants: HPU, Local Authorities' Environmental Health Department (EHD), GP, health visitor, or community paediatrician and CRCE (for advice)
- environmental investigation is conducted by Environmental Health Officer (EHO) with advice from CRCE about appropriate samples. In all cases, domestic water should be sampled. If households have a public water supply liaise with the appropriate drinking water company to arrange sampling and testing.

2.7. Incident meeting to discuss risk assessment and agree a co-ordinated response

- Suggested participants: HPU; EHO; GP; Paediatrician; Toxicologist; DWI; CRCE
- it is important to balance the risk of lead exposures against other public health risks such as being made homeless.

2.8. Control the hazard – secondary prevention

- actions taken will vary depending on the identified source of exposure
- HPU's are unlikely to be directly responsible for implementing any control measures, but they will have an important role in coordinating this response with the relevant agencies
- EHO will co-ordinate any necessary remediation and agree a reasonable time-scale for the landlord/owner to carry out any remediation

- Other departments or agencies may be involved depending on the source, e.g. Trading Standards or the Health and Safety Executive (HSE)
- See appendix 4 for examples of typical exposure scenarios and recommended actions
- See appendix 5 for an overview of relevant legislation

3. Action following a notification of an identified lead hazard

3.1 Start HPZone entry *(detail of where to find lead code)*

3.2 Collect details of hazard:

- location/setting
- potential exposed population
- any assessment undertaken

3.3 Discuss with CRCE and conduct a risk assessment

3.4 Advise that everyone who may have been exposed is considered for blood lead level investigation

- particular consideration should be given to identifying people in vulnerable groups (see 2.5.3)

3.5 Consider an incident meeting (see 2.7)

3.6 Control the Hazard: primary prevention

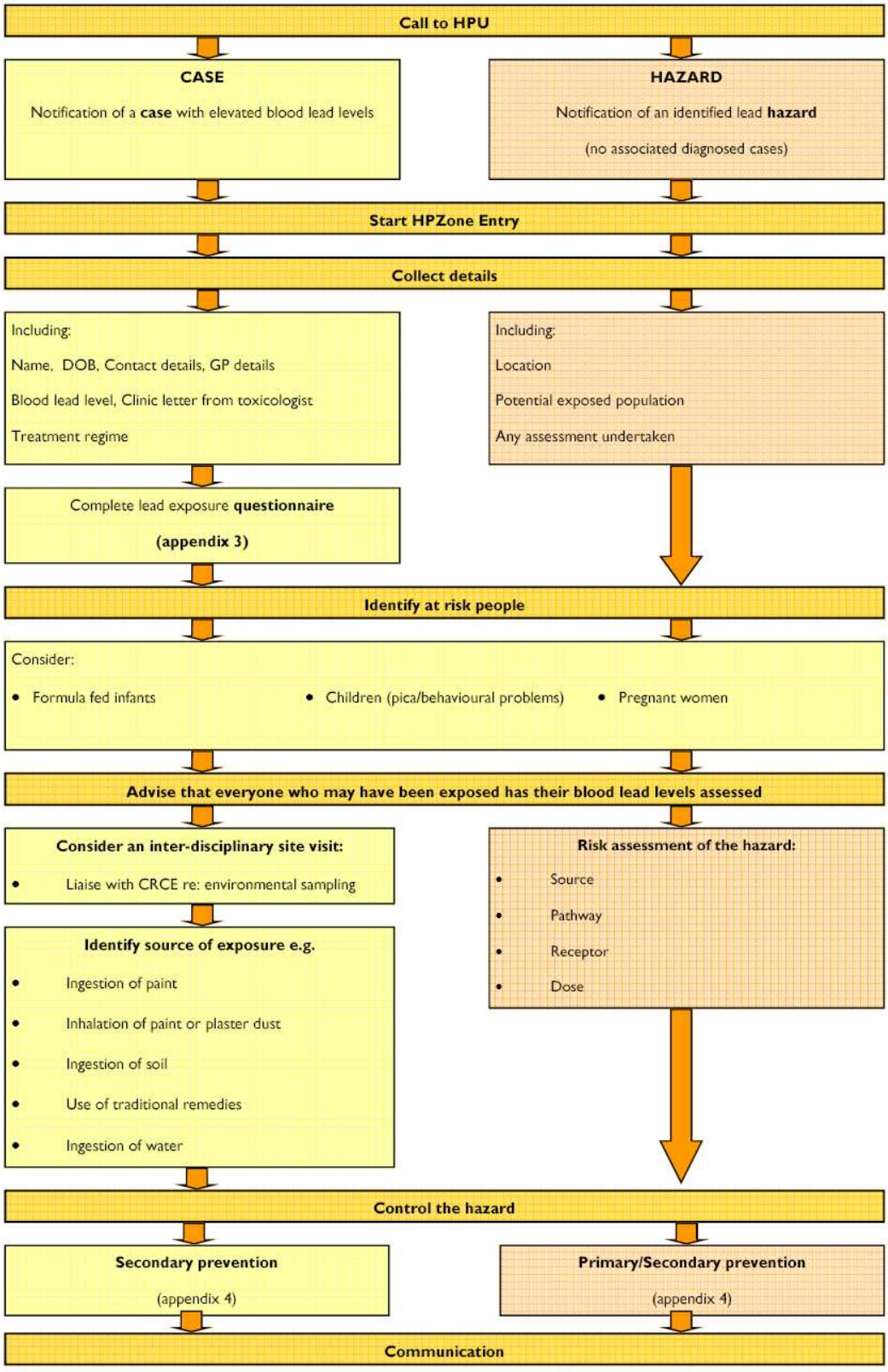
- HPUs have a role in primary prevention efforts to limit the exposure to lead containing products.
- The actions taken will vary depending on the identified source of exposure
- Examples include:
    - Community development work with targeted communities to raise awareness of the potential risks of traditional medicines.
    - Work with EHO's to publicise the risk from lead related to deterioration of old leaded paint or redecoration and removal of lead paint; this could include distributing leaflets to local DIY stores.
    - Work with health professionals to highlight the potential health hazards of traditional medicines. Diabetic patients and those with rheumatological conditions could be targeted as many traditional remedies are specifically aimed at these groups.

Appendix 1: Overview of roles in a chronic lead incident

Organisation	Role	Collaborators	Key legislation of note
HPU	Public health risk assessment	CRCE	Health Protection Agency Act 2004
	Coordinate health protection/prevention activities	EHD/ Health Visitors	Health Protection Agency Act 2004
	Proper Officer function to protect public health (Part 2A)	LA	Public Health (Control of Disease) Act 1984, as amended by the Health and Social Care Act 2008; Health Protection (Local Authority Powers) Regulations 2010 and the Health Protection (Part 2A Orders) Regulations 2010
NPIS	Provide expert advice on acute and chronic poisoning to health professionals		
CRCE	Provide expert advice about the public health risks		Health Protection Agency Act 2004
EHD and LA	Proper Officer function to protect public health (Part 2A)	HPU	Public Health (Control of Disease) Act 1984, as amended by the Health and Social Care Act 2008; Health Protection (Local Authority Powers) Regulations 2010 and the Health Protection (Part 2A Orders) Regulations 2010
	Coordinate and conduct environmental interventions	HPU	Health Protection Agency Act 2004
	Test water supply	Public water supply mains: local water company Private water supplies: responsibility of water supplier (regulated by local authority)	• The Water Supply (Water Quality) Regulations 2000 (Amendment) Regulations 2007 • Water Act 2003 • Water Supply (Water Quality) Regulations 2000 in England and 2001 in Wales • Private Water Supplies Regulations 1991 • Part II Environmental Protection Act 1990
	Sampling and remediation of paint in domestic households	Social housing: EHPs	Housing Act 2004
	Soil sampling – garden, playground etc		Part IIA of the Environmental Protection Act 1990

Health care services	Diagnosis and treatment of individuals	NHS e.g. Health visitors, GPs, toxicologists, physicians, paediatricians, NPIS	
Private home owner	Sampling and remediation in domestic households	Insurers	Housing Act 2004
Trading standards	Safeguard the health and well-being of consumers	LA/HPA	Consumer related legislation
Health and Safety Executive	Prevent death, injury and ill health in workplaces	LA/HPA	The Health and Safety at Work etc Act 1974

Appendix 2 – Lead Action Card Flowchart



Appendix 3 - Lead Exposure Questionnaire

HEALTH PROTECTION UNIT

LEAD EXPOSURE QUESTIONNAIRE

You or a family member may have been diagnosed as suffering from lead poisoning. Please complete this questionnaire (*a parent will need to complete the questionnaire for their child*) to help us identify the potential source of the lead.

Please answer all questions as accurately as possible.

Please return this questionnaire to:

Tel:
Fax:

YOUR NAME:

ADDRESS:

TEL NO:

SECTION A – About you (or your child)				
How many people live in this household? (including yourself)				
Number of adults				
Number of Children	0- <1 yrs …..	1- <6 yrs..….	6- <10 yrs……..	10 – 16 yrs……
Are you			*Please circle as appropriate*	Male Female
What was your age at your last birthday?				
What is your post code?				
How long have you lived at your present address?				**Years** **Months**

SECTION B – Occupational status or school attendance of case and parents (if child)

Children:

Are you: *(please circle as appropriate)*

a. at nursery
b. At school or at college
c. do not attend either of the above

Please give details (name and address) ……
……

Adults:

Are you: *(please circle as appropriate)*

a. Self-employed
b. Employed by somebody else
c. Looking after the home or family
d. Not employed
e. At school or at college
f. Permanently unable to work because of illness or injury
g. Other (Please state)…….

SECTION C – General information about your occupation or parents/guardians occupation	
How many hours a week do you usually work in your *<u>main</u>* job?	…….hours
Number of hours worked per week overall	..……..hours

What is the full title of your main job? ……
Describe what you do (did) in your main job? ……
What is the main business of your employer at the place where you work (worked)? ……

SECTION D – Detailed information about your occupation and hobbies or parents/guardians occupation and hobbies				
Does your job or hobby involve exposure to lead?	Yes		No	
If NO – skip to Section E: Food and Product Exposure				
*If **YES** – please tick the appropriate boxes below:*				

	Mechanic/Automotive		Firing range staff or user		Recycle facility worker
	Asbestos removal		Glass blowing or manufacturing		Renovation/Remodeling
	Battery recycling or manufacture		Jewellery-making		Roofing
	Boat building, painting or repair		Lead smelting, bullets, fishing sinkers, dive weights, toy soldiers		Scrap metal recovery
	Brass or copper foundry work		Paint, pigment or shellac manufacture		Stained glass
	Bricklaying		Painting		Sign painting
	Bridge or steel structure: painting or sandblasting		Plastering		Soldering
	Cable laying or repair work		Plastics Manufacture		Tiling
	Construction/Demolition		Plumber/pipe fitting		Wallpaper contractor
	Ceramic/pottery glazing		Pottery		Welder/metal worker
	Enameling		Printing		Other……

SECTION E: Food and Food Products				
Do you use any folk or traditional remedies? e.g. kohl, surma, calabash chalk*	Yes		No	
Do you eat or drink from ceramic/pottery dishes that were made abroad (not US or European)?	Yes		No	
Do you use pewter containers or expose food to pewter products?	Yes		No	
Do you use imported sweets, candies, spices or canned foods?	Yes		No	
If yes, please list …….. **……**				
SECTION F: Your Home				
Was your home built before 1970?	Yes		No	
Has your home had major plumbing work done within the last 5 years?	Yes		No	
Does your home have visible areas of peeling or flaking paint?	Yes		No	
Are you in the process of decorating, remodeling or renovating an older home?	Yes		No	
If yes, please give details …….. **……**				
SECTION G: Previous Testing History				
Have you been tested for lead poisoning before?	Yes		No	
If yes, please give details …….. **……**				
Have you ever been given a diagnosis of lead poisoning?	Yes		No	
If yes, please give details …….. **……**				

* This is not an exhaustive list

Appendix 4 – Potential scenarios of lead exposure and recommended actions

1. **Ingestion of flakes of older household paint (pre 1970's) or exposure to paint or plaster dust resulting in the inhalation of lead containing paint – e.g. from sanding**
   - If there is a history of ingestion of paint, appropriate clinical investigation and management should be initiated. Advice can be sought from NPIS.
   - Sampling of the paintwork should be carried out to determine whether it contains lead.
   - Lead based paint is paint with a lead content of 1.0 mg/cm^2 or 0.5% by weight, so any paint with this level or above would be considered potentially dangerous (US Department for Housing and Urban Development and Environmental Protection Agency).
   - Also consider exposure to lead via dust from old paint during redecoration of older properties. Provide advice on how to limit exposure using protective equipment (see public information leaflet produced by Defra[4]).
   - Remember that it is not just paint on walls/woodwork that is important. Antique furniture / toys and imported modern toys may be painted with lead-containing paint.
   - Issues to be considered include: whether the property is privately or local authority owned (and if it is owned by the local authority, who manages the property); whether the property is rented; who is liable for costs and whether financial support is available for private accommodation or the property is insured.
   - For further information about relevant legislation, please see the accompanying flowchart: "Overview of legislation relevant for incidents of lead exposure".
   - The EHP's role involves the organisation of environmental sampling and remediation (especially for social housing). Remediation may involve the removal of old paint work, painting over flaking paintwork or other such measures that result in blocking the source - receptor exposure pathway. It is also important that dust is remediated as this can provide a continuing source of exposure.

2. **Ingestion of soil contaminated with lead**

   - Children may or may not have a clear history of soil ingestion.
   - Consider soil sampling but this should be done in consultation with CRCE and the relevant laboratories. Interpreting the results can be challenging and samples from urban settings often have lead concentrations close to or exceeding the soil guideline values (SGVs).
   - Remediation measures include supervision of the child to prevent soil ingestion and laying a barrier of some kind (wooden decking for example) over sections of the garden to prevent the child's access to soil.

3. **Use of traditional remedies**

   - Lead toxicity is increasingly recognised as a potential risk from the use of traditional remedies. One study in the US, which looked specifically at

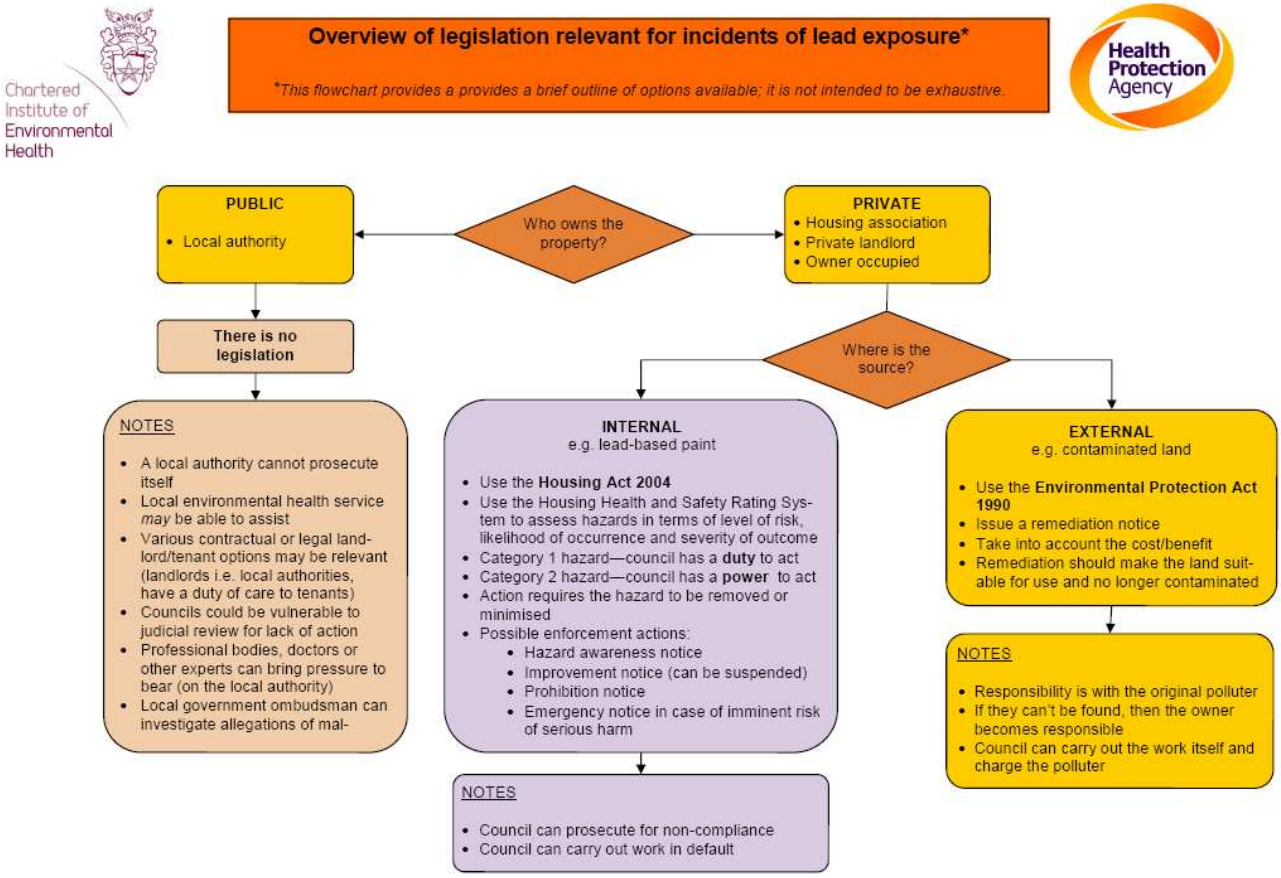
Ayurvedic medicines, found that around 20% were contaminated with lead (Saper *et al* 2004).

- The case may give a history of having obtained a traditional remedy such as Ayurvedic medicine or Chinese herbal medicine. Traditional medicines from many other areas of the world may also contain lead (for example, West Africa, South America, and Australasia).
- The case may not disclose the use of these remedies when questioned. This may either be deliberately concealed or may not be considered as relevant as these remedies are thought of as 'tonics' rather than medicines. Therefore there is the need to be explicit when asking for this information.
- Investigate the source of the medicine, for example, was it obtained in UK or sent from overseas?
- Testing of the medicine could be arranged following discussion with CRCE.
- If an herbal remedy is found to contain high levels of lead, remediation will involve advising the patient to stop taking this remedy and to explain that other remedies may also contain high levels of lead. Also ensure that patient's contacts such as family or friends who may be using this also are aware.
- If a lead contaminated herbal remedy was purchased in UK, liaise with the local trading standards team in order to ensure that there is no further opportunity for the medicine to be used by other members of the public.

4. Ingestion of contaminated water

- This is less likely due to the discontinuation of using lead solder for pipes carrying potable water. However it is often worth considering whether the domestic water supply should be sampled. This should be done in discussion with CRCE and the drinking water supply company.

Appendix 5 – Overview of legislation relevant for incidents of lead exposure



References:

Brailsford, S., Kamanyire, R., Ruggles, R (2008) Lead poisoning cases associated with environmental sources. Chemical Hazards and Poisons Report 11, 16-20 (http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1205394722380)

Defra (2005) Advice on lead paint in older homes (http://www.defra.gov.uk/environment/quality/chemicals/lead/documents/leadpaintleaflet.pdf)

Environmental Protection Act (1990). (http://www.opsi.gov.uk/acts/acts1990/Ukpga_19900043_en_1.htm)

Jones A. (2006). The public health impact of lead and the role of health protection. Chemical Hazards and Poisons Report 8, 14-17 (http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1197382230429).

Jones A, Ruggles R, Murray V. (2006). Development of a lead “action card” for public health practitioners. Chemical Hazards and Poisons report, January 2008 (21) pp 21-24 (http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1205394722380)

Saper RB, Kales SN, Paquin J. et al (2004) Heavy Metal Content of Ayurvedic Herbal Medicine Products. JAMA 292, 2868-2873.