
Outdoor Shooting Ranges and Land Contamination - Considerations for Councils

Dr Corinne Rooney at Lincoln University in New Zealand, a researcher into lead shot contamination of shooting ranges, has made the following comments in August 2002:

"Most clay target club sites will have elevated lead concentrations in the soil. Depending on the general climatic conditions of the particular area, the soil could be substantially contaminated, well above the guideline limit for lead in soil (300 mg/kg) stipulated by ANZECC (The Australian and NZ Environment and Conservation Council).

"It is common in Canterbury, New Zealand, for ranges used by clay target clubs - even those with less than 50 or so members - to contain well in excess of ten tonnes of lead each and soil lead levels greater than 10,000 mg/kg are commonly reported.

"At first thought, many people expect lead to be insoluble and therefore of no consequence, however recent research has shown that this is far from the case. Whenever lead pellets (or other ammunition) come into contact with moist soil, the pellets corrode. It's similar to a car rusting. The corroded material on the pellets develops rapidly, and is highly soluble in the soil.

The soil 'soaks up' lead, a bit like a sponge with water. But there is so much soluble lead at shooting ranges that the soil can't soak it up, and most of the lead is leached through the soil, most commonly by vertical drainage. Where soil and gradient conditions allow, lead may also be moving out of the soil by horizontal sub-surface flow and this type of drainage may enter a nearby stream or river. Each lead pellet takes thousands of years to dissolve, and the substantial contamination effect will continue for this period."

An excellent summary of Dr Rooney's findings has recently been web-published at www.lead.org.au/fs/shootingranges.pdf and callers to the Lead Advisory Service Australia (freecall 1800 626 086) are welcome to request a copy be sent to them, if they do not have web-access.

Dr Rooney concludes that, the lead shot must be removed from the soil, the soil chemically washed and further contact between lead and soil must be eliminated. While expensive, such measures (for example, a geotextile covering the entire shot-fall area, and a drainage collection system) "will be far cheaper than dealing with the soil contamination if soil is exposed to lead shot."

Local council environmental planning powers and land contamination

Local councils have particular responsibilities when assessing a development application of potentially contaminated land, such as shooting ranges, when change of use or rezoning is involved. SEPP 55 states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed.

Local councils and management of land contamination

In NSW, the management of contaminated land is shared by the EPA, the Department of Urban Affairs & Planning and **local councils**, as prescribed in the Contaminated Land Management Act (1997) (CLM Act) and State Environmental Planning Policy No 55 (SEPP55)

While contaminated sites that pose a significant risk of harm to human health or the environment are the responsibility of the Environment Protection Authority (with mandatory notification to Councils of all remediation proposals), the management of contaminated sites that do not pose a significant risk of harm to human health or the environment, and hence are suitable for the current or approved use, are managed by **local councils** through the land use planning processes.

Gun Clubs and shooting ranges are likely to fall into this second category, and local councils are therefore responsible for ensuring that good management of the site prevents the contamination reaching a level where it would become present a "significant risk of harm to human health or the environment" as defined in the CLM Act and SEPP 55.

Regular clean up of spent shot constitutes good environmental management of outdoor shooting facilities. In cases where prevention of significant contamination of land has failed, who is responsible for remediation?

Who is responsible for remediation?

The "polluter pays" principle was expressly adopted by the NSW legislation. Hence the responsibility for clean up/remediation falls, in order of priority, onto:

1. the person who has principal responsibility for the contamination,
2. the owner of the land,
3. the notional owner (as defined in the CLM Act)

There should be some serious consideration of who is going to pay for the cost of cleaning up the lead shot and its associated arsenic and antimony contamination that has been allowed to fall on Gun Club and non-Gun Club owned land for all the years any club has been operating. Who will test the heavy metal contamination in any water leaching from the shot-fall area (especially if it feeds any drinking water supplies like river water or bore water)? And who will ensure that other safety conditions are placed on the club if the Council has seen fit to impose none to date?

Some of the cost of de-contamination can be offset by sharing in the profits from the sale of the lead picked up and sold for recycling. There is a company called Leadex (Phone: 03 5439 5896, mobile: 0429 396 939 [Email](#)) that is successful at separating the lead from the soil all over Australia.

Inspiration for addressing management of land contamination caused by lead shot can be found in other states, such as Queensland.

According to a letter to all zone secretaries of the Queensland Clay Target Association dated 13/8/02, one Council in Queensland has already imposed an environmental levy to cover the future clean-up cost, on the Redcliffe City Gun Club, as a condition of lease by the council. The money is paid to Council. And the forward-thinking Gold Coast Club imposes an environmental remediation levy of \$1.00 on a shooter each time they shoot at the club - this includes visitors, so it's definitely a "user-pays" approach. The money is banked in a separate account and kept for the time it may be used.

Other issues that should be considered by councils in relation to management of outdoor shooting facilities include:

- Is the property fenced? Could a child wander onto the shot-fall area and pick up and eat a lead pellet? Could cattle or other animals? If none have been tested, would you know it hadn't already occurred?
- Would NSW noise limits imposed by the Environment Protection Authority (EPA) be met outside the houses nearest the gun club if the club were operational? How would you know unless the noise was measured? The EPA can place time restrictions on the operation of gun clubs or limit the size of the guns due to noise limits.
- Lead shot is not the only contamination caused by clay target clubs and polyaromatic hydrocarbon (PAH) containing clay targets may not always be permitted in Australia. High PAH-containing clay targets have already been banned in some European countries and have been associated with clean-up costs for lead shot AND clay targets in Canadian clay target clubs, of the order of Canadian \$1-2million.
- Are the gun club members adhering to a general responsibility that all people have under NSW legislation, to NOT CONTAMINATE land? Are they adhering to the National Environment Protection (Assessment of Site Contamination) Measure 1999, which states, on page 5, that "Contamination, or further contamination, of a site should be prevented"?

Shooters and the community put a lot of emphasis on gun safety. Now that the contaminating effect of lead shot and clay targets is becoming known, shooters and their Councils need to develop a similar emphasis on environmental safety.