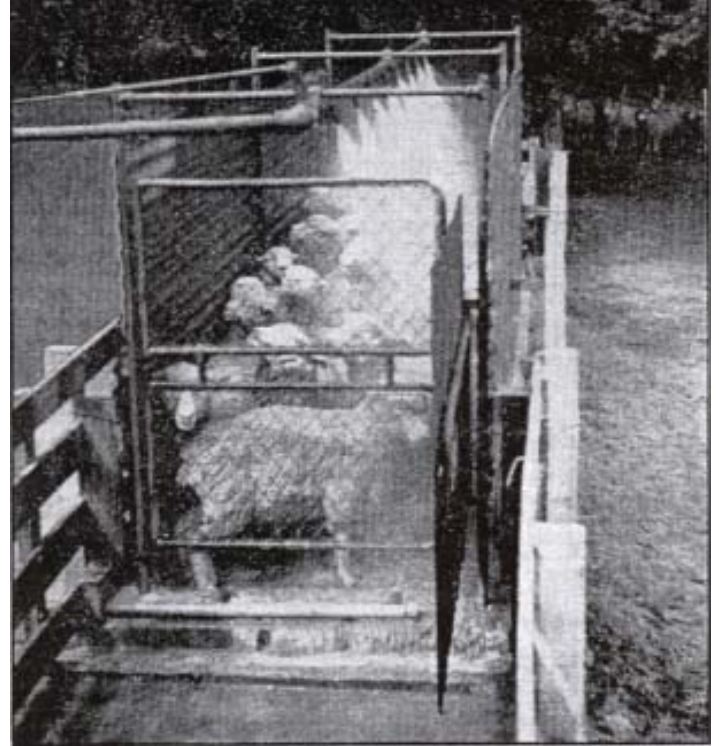


# Sheep dips, spray booths and footbaths

Since the 1880s, New Zealand sheep have been dipped in, or sprayed with, chemical remedies to protect them from ticks, lice and fly-strike. Footbaths were, and still are, used to protect against footrot in many different types of livestock.

Most farms that ran sheep in New Zealand had a sheep dip because dipping was compulsory by law from 1849 to 1993. Large farms often had more than one dip (some having as many as five), and some employed several different types of dips, sprays and baths (see below). The current best estimate is that there are around 50,000 sheep dips across the country. This means that your farm, or the farm of someone you know, could have or have had a dip on it.



Until the 1950s, most sheep dip chemicals were arsenic based. Arsenic was a very effective insecticide, but it does not break down in the environment and stays around indefinitely. Up until the mid 1960s organochlorine insecticides were most popular for sheep dipping. Organochlorines included the infamous DDT, dieldrin, lindane and aldrin and occasionally endrin. Organochlorines were better than arsenic at breaking down in the environment, but can still remain in soil for many years, and even worse, are able to accumulate in pasture and food and animal products. Among the commonly used chemicals in foot baths were arsenic, copper and (latterly) zinc – none of which degrade in the environment.

The good news is that modern dip chemicals and dipping methods are much more specific to killing livestock pests, and break down much more readily in the environment.

Research completed by Environment Waikato shows that 96 per cent of former sheep dip areas are contaminated with arsenic to an extent that results in significant risks to human and stock health. These risks can be managed by a little bit of common sense.



Photo: WaitPAC

## The risks

### Soil contamination

Soil beneath a dip, footbath or spray booth may be contaminated from product leaching through cracks or holes or deliberate release from a sump. Soil immediately surrounding the dip structure may be contaminated from product splashing, disposal of (spent or stripped) dip solution or 'product sludge'. Spent liquid was often pumped, bucketed or sluiced onto nearby ground. Sludge from the bottom of the tank was often shovelled out onto the ground alongside the dip. However, contamination was not just confined to the immediate vicinity of the dip. Dips located near a gully, stream or the coast, may have had spent solution flushed out into those water bodies. Soil contamination may also be present in holding pens or in adjacent paddocks where sheep stood and dripped after being dunked or sprayed. Sheep tended to run once they got out of their holding pens, or were often released immediately into adjacent paddocks, thereby spreading dip chemicals a long distance from the dip itself. These various practices make it very difficult to guess where soil contamination is the greatest, and means the most contaminated patch isn't necessarily right next to the dip. Also, contamination may be found where the chemicals were stored.

### Water contamination

In addition to excess chemicals being flushed down waterways, soil particles can be transported into nearby waterways during rain or wind, carrying contaminants with them. Also, dip chemicals can leach down through the soil and enter underground aquifers and ground water supplies. If a nearby bore is used for stock watering or domestic supply, there is a risk this supply could be contaminated with pesticides above recommended guidelines.



### Potential impacts on human health

Adults exposed to arsenic and organochlorines are unlikely to become sick immediately, but could suffer a range of ill effects over long periods of time – some potentially life threatening. Children, on the other hand, are at much greater risk due to their tendency to 'get dirty', which includes voluntary and involuntary eating or inhaling small amounts of soil. Because of their smaller size, children also have a lower ability to cope with contaminants compared to adults.

Historically, sheep dips tended to be some distance away from houses and thus from where children played. However, when farms are subdivided into residential or lifestyle blocks, the possibility that a child could come into contact with a dip is greatly enhanced. Also it is possible that a family vegetable patch or fruit trees could be planted in contaminated soil, and the fruit or vegetables the family eat may be contaminated too.

### Potential contamination of produce

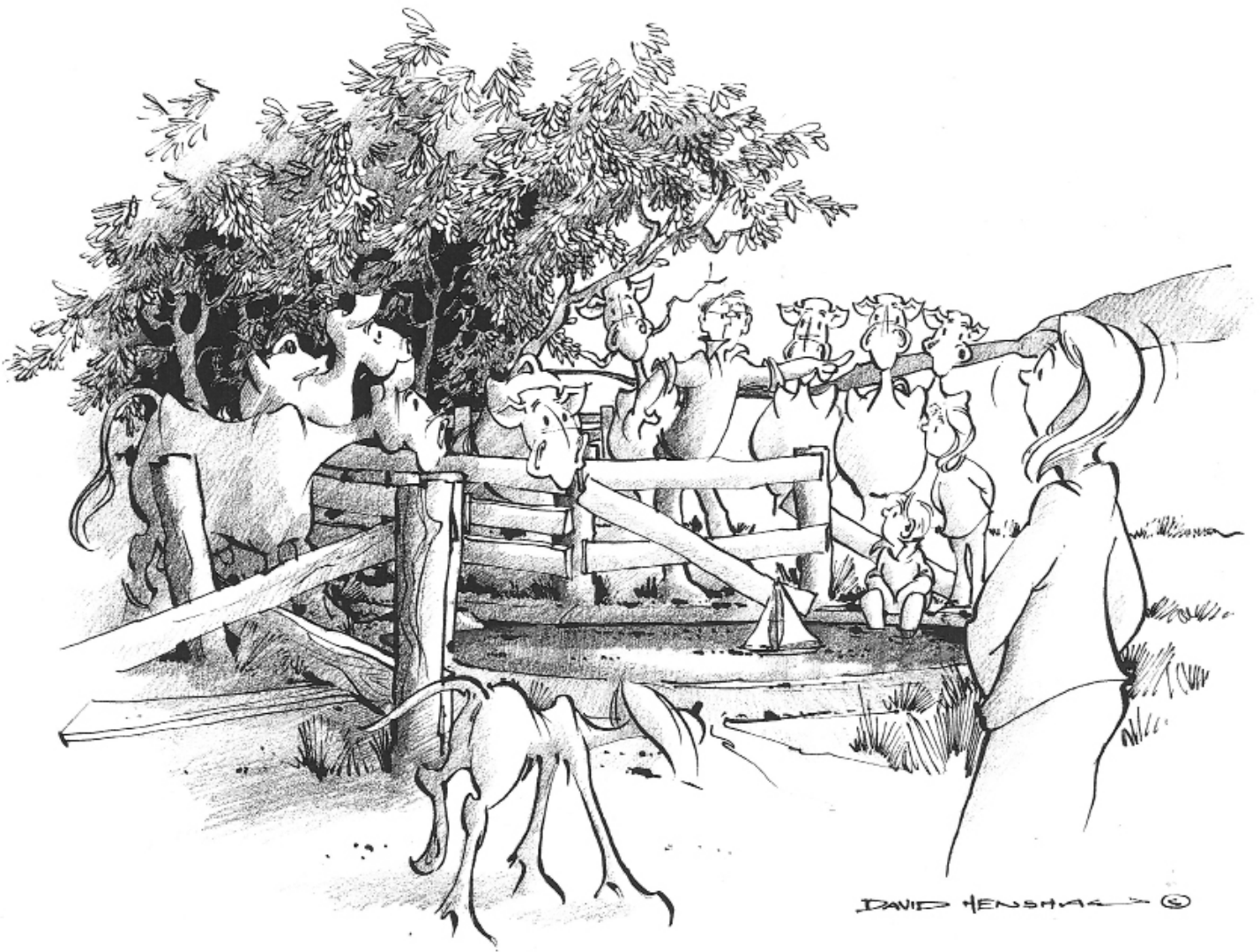
Grazing animals consume significant amounts of soil due to their tearing motion when eating and from soil residues from rain splash and/or dust. Small amounts are taken up through pasture itself. When ingested, organochlorines are stored in the animal's fatty tissue, and traces can be found in milk and meat products. Our overseas markets are particularly sensitive to traces of organochlorines in meat, and Australia experienced this first hand in 1987 when large consignments of beef exports were refused entry to the USA.



Photo: WaitPAC

There has already been at least one case in the Waikato region where cattle have died from arsenic poisoning as a result of grazing a former sheep dip area. Livestock can also suffer from long-term effects of exposure to contaminants.

Not only can home gardens grown on former sheep dips produce vegetables that have unacceptable levels of contaminants, wild foods gathered from affected gullies and stream beds (such as water cress, fresh water mussels and koura) can be affected too.



DAVID HENSHAW ©

“I KNOW THE DIPS NOT THAT CRASH HOT FOR TH’ KIDS BUT DAMMIT...THE COWS HAVE BEEN DRINKING OUT OF IT!!”

## Where do we find them, and what do they look like?

Because of the need for water to operate a dip, dips were often located near surface water or ground water bores. Others were located near stock yards and/or wool sheds. Many structures associated with historical dipping or foot bathing practices will have long disappeared, but you may be able to find concrete structures, unusual looking yard formations, or conventional shaped ground indentations in these areas which indicate that a dip or bath was or may have been present. The pictures below are examples of dips, showing the way they look now after years of disuse.

If you cannot see any structures, it does not mean your farm does not have a dip – it may simply mean the structures have been removed or buried.

Many people will be able to remember long hot days dipping sheep, at the end of which the dogs were often also dipped – and sometimes the odd unruly young farm hand! People with good memories are very important in helping us locate where dips, booths and baths were located. If you know someone who used to own or work your farm when dipping occurred, they may well be the best place to start.



Photo: WaitPAC



Photo: WaitPAC

## What can you do to protect yourself, your stock and your environment?

### Manage the risks

If you have a former dip, spray booth or foot bath on your property, you may be able to simply manage the site to minimise risks. This will include restricting access to the immediate area from both livestock and people (for example, with permanent fencing), and ensuring that no produce is grown there or groundwater collected in the vicinity.

OR

### Remediate the site

You could investigate the extent of contamination, identify areas of risk and remediate the area where the contaminants are present at higher than acceptable levels (see MfE guidelines). This would involve professional testing of soil in the area and possibly removing the contaminated soil to an approved facility. This option is usually more expensive but is permanent and 'removes' the risks. If the site is to be used more intensively, such as for residential or lifestyle housing, this is considered the safest option.



Photo: WaiPAC

The option you choose will depend on many factors, and you may need to do a little investigative work or get additional advice from a consultant, Environment Waikato or your local council to help you make your decision. We can help suggest who you can go to for consultancy services.

Please note: Environment Waikato has a permitted activity rule regarding discharges from contaminated land. If you intend to undertake remedial works you will need to comply with this rule. Your local council may also have specific 'contaminated land' rules that you will need to comply with. As such it is recommended that you contact both councils before any work is undertaken.

## Land Information Memoranda (LIMs)

If you locate a sheep dip or footbath, and intend doing nothing or simply managing the site, it is good practice to notify the local council. It is important (but not a legal requirement) to record its location on the property's Land Information Memoranda (LIM), held at your district or city council. This means that even if the property changes hands or is subdivided, the location of the sheep dip will be on record. If you are selling property, you have an obligation to disclose any information you hold in relation to a site at the request of the purchaser, and you must also ensure that you do not mislead a prospective purchaser about the state of the property. A LIM is a good way to ensure potential purchasers get the information they need.

Conversely, if you are purchasing land, you will be able to check the LIM to see if a sheep dip has been found on the property you are interested in. Information that can be added to the LIM can include how the area has been managed, and should be managed in the future, to ensure that risks are minimised or eliminated.

## More information

For more information on sheep dips, spray booths and footbaths:

- Ministry for the Environment's **Identifying, Investigating and Managing Risks Associated with Former Sheep-dip Sites** (2006), available from [www.mfe.govt.nz/publications/hazardous/risks-former-sheep-dip-sites-nov06/index.html](http://www.mfe.govt.nz/publications/hazardous/risks-former-sheep-dip-sites-nov06/index.html).
- Call Environment Waikato for friendly advice on our freephone 0800 800 401, we are happy to help.