

Dieldrin and cancer concerns on the Bellarine Peninsula

Community information, February 2019

This community information sheet provides a summary of the historic use of dieldrin, testing of dieldrin levels in soil on the Bellarine Peninsula, and the Chief Health Officer's review of cancer rates on the Bellarine Peninsula following related community and media concerns.

About dieldrin, its historic use and its health impact

What is dieldrin?

Dieldrin is a manufactured 'organochlorine' insecticide that was used worldwide in agriculture to protect crops from insect pests. It was also an effective control for termites in houses. Dieldrin works by interfering with the central nervous system of insects. It is toxic to aquatic organisms and other wildlife and accumulates in the environment.

Dieldrin sticks to soil and breaks down slowly. The levels in soil reduce by half approximately every 5 to 7 years. Dieldrin was prohibited for use and sale in Victoria in 1987.

Where is dieldrin found?

Dieldrin at low levels may still be present in soil in areas where it was used as a pesticide. It may also be attached to dust particles. Dieldrin does not dissolve in water very well and was therefore not found in water at high concentrations. When dieldrin was used in agriculture, the main route of exposure occurred by eating contaminated food, including root crops, dairy products and meat. People who live in homes that were treated for termites using dieldrin may also have potentially been exposed.

Because of the way dieldrin breaks down and the length of time since it was last used, the amount of dieldrin still present in the environment has significantly reduced since 1987.

What are the health effects of exposure to dieldrin?

When dieldrin was used in agriculture, accidental exposure could cause health effects including headache, nausea, vomiting, dizziness, light-headedness and fainting. There have been cases where people have been poisoned and died after swallowing large amounts of dieldrin (intentionally or accidentally). These health effects of dieldrin are no longer relevant since it is not used and not available to buy.

Is dieldrin linked to cancer?

The most widely recognised classification of cancer risk from environmental factors comes from the World Health Organisation's (WHO) International Agency for Research on Cancer (IARC). This agency assesses the risk of human cancer from environmental factors including chemicals, occupational exposures, biological agents and lifestyle factors. In 1987, the IARC determined that dieldrin was 'not classifiable as to human carcinogenicity'. However, when dieldrin was last reviewed by the IARC in 2016, its classification was changed to 'a probable carcinogen' based on 'limited evidence' for breast cancer in humans and 'sufficient evidence' for liver cancer in experimental animals. Some pesticides (like DDT) have previously been associated with non-Hodgkin lymphoma, chronic lymphocytic leukaemia and multiple myeloma. However, this association has not been found for dieldrin.

Why were farms on the Bellarine Peninsula tested for dieldrin and other pesticides?

Land on the Bellarine Peninsula has a history of potato growing and in some cases this included the use of dieldrin to control insects. It is understood farmers often rotated paddock use between potato cropping and sown grass or pasture for grazing cattle. In 1987, dieldrin was detected in export beef consignments sent to the United States, resulting in the imposition of trade restrictions. Since then the Victorian Government has undertaken extensive monitoring to identify properties with contamination and, working closely with the livestock industry, to manage the risk of residues transferring into beef products.

Who is responsible for testing (contaminated) land and approving its future use?

The Environment Protection Authority Victoria (EPA) recommends that any buyer of land undertake their own independent sampling of any land for contaminants if they are worried about past land use. The City of Greater Geelong Planning Scheme has applied soil assessment requirements for all major residential growth areas. If significant levels of contamination are found, this would trigger the full requirements of the Environment Protection Act 1970.

Why does some land get tested and some not?

The planning scheme is the primary means for regulating land use and approving development. It is an important mechanism for triggering the consideration of potentially contaminated land. The City of Greater Geelong Planning Scheme requires land contamination testing for planning scheme amendments or applications where potentially contaminated land would be used for a sensitive use, such as for residential development, schools, childcare or public open space.

The EPA maintains a Priority Sites Register, which lists sites with a *Clean Up or Pollution Abatement Notice* requiring actions to manage or reduce the risk to human health and the environment from contamination. These sites are identified because land contamination may cause harm to human health or the environment under the current use. In some cases, the required actions include testing for contamination, and can also include clean-up of the site, monitoring, and other controls.

Some organisations, including councils and government departments or agencies, may also undertake testing for contamination as part of ongoing due diligence, or in response to an issue or complaint.

How is contaminated land tested and made safe for future use?

The Australian Government's National Environment Protection (Assessment of Site Contamination) Measure [NEP(ASC)M] sets out how contamination must be tested across Australia. The NEP(ASC)M lists concentrations of chemicals in soil, Health Investigation Levels (HIL), above which further health investigation and evaluation are required.

To determine whether a site is safe for future use, the EPA has an established audit system. A statutory environmental audit provides for an environmental auditor appointed under the Environment Protection Act 1970, to undertake an independent assessment of the condition of a site and form an opinion about its suitability for the proposed use.

An audit of the condition of a site may result in issuing either:

- **a Certificate** of Environmental Audit that indicates the auditor believes the site is suitable for any beneficial use and that there is no restriction on use of the site due to its environmental condition; or
- **a Statement** of Environmental Audit that indicates that the auditor believes there is, or may be, some restriction on use of the site due to its environmental condition. A Statement may include conditions that require remediation works to be undertaken or places ongoing requirements on the site. A Statement might also indicate that a site is not suitable for any use, in which case the EPA will usually issue a Notice to require clean up or management of that site.

I grow produce on the Bellarine Peninsula – how can I reassure consumers that it is safe?

Chemical residue monitoring programs under the National Residue Survey and by Agriculture Victoria demonstrate a very high level of compliance with residue standards in Australian produce.

Many producers participate in Quality Assurance programs and routinely undertake chemical residue testing of their produce to provide assurance to themselves, and their customers, that their produce is not contaminated.

You may wish to undertake testing of your soil if you have reason to believe organochlorine chemicals may have been used on your property or if you feel this would provide additional assurance to you or your customers.

For further information you can contact your local Agriculture Victoria Chemical Standards Officer on 136 186.

What tests have been conducted on the Bellarine Peninsula?

The EPA has sampled several locations in the Geelong region for organochlorines (the family of chemicals that includes dieldrin). Sites at Point Lonsdale, Ocean Grove, Leopold, Queenscliff, Moolap and Portarlington have been sampled in the past. Since the 1990s there have been environmental audits at 21 sites across the Bellarine Peninsula, many of which have included tests for organochlorine pesticides. The audits were found to have low to negligible environmental risks for organochlorines.

What levels were found and what do they mean?

Soil testing revealed that organochlorine pesticides, including dieldrin, were below the detection level of the analytical test, which in this case was 0.001 mg/kg. In Australia, the level of dieldrin in soil that would trigger the need for further investigation is 6 mg/kg. The levels were all well below this 'Health Investigation Level' or HIL, which is the concentration of a substance in soil, water or air that triggers further investigation and evaluation to determine whether there is any risk to public health.

About schools in the area and dieldrin testing

When is testing of land required for schools and by whom?

As part of the process of acquiring land, the Victorian School Building Authority conducts comprehensive testing for contaminants to ensure that each site is suitable for use as a school. Current government policy requires approval from the Victorian Government Land Monitor for all land acquisitions above a value of \$750,000, and this approval process requires investigating the suitability of the land. This includes: soil testing for possible contamination; geotechnical and topographical features investigations; assessment of flora and fauna; and archaeological or cultural heritage significance.

Soil testing is undertaken according to the EPA's guidelines for school use, which is designated as 'sensitive'. Soil testing addresses a number of potential risks, including contaminants harmful to human health such as organochlorine pesticides (dieldrin).

Which schools were tested?

Bellarine Secondary College (Drysdale Campus) site was purchased in the late 1990s from the City of Greater Geelong and was farming land prior to its acquisition. The Department of Agriculture conducted tests on farming land in the area of the school site prior to the purchase of the land in the late 1990s. The results show that contaminants were not detected at harmful levels. The Education Department relied on these results to determine that the land was suitable for use as a school.

In 2016, in response to community concern, the Geelong Council tested the oval adjacent to the Drysdale Campus.

In September 2018, the Department of Education and Training commissioned independent tests on the soil at this school. The results showed no cause for concern about levels that could affect human health. Around the same time, WorkSafe conducted separate soil testing of this school and found that concentrations of contaminants were well below guideline levels for the protection of human health.

The **Barwon Heads Primary School** site was purchased in 1946. The Department of Education and Training understands that it was grazing land prior to its purchase. In response to community concern, the Department commissioned independent soil testing at this school in January 2019. The results showed no cause for concern about levels that could affect human health.

Are children and teachers attending these schools safe now?

The health and safety of students and staff is the Department of Education and Training's top priority. Families can be reassured that there has been independent testing carried out at both school sites, confirming that there are no contaminants such as dieldrin in the soil at levels that could have potential health effects.

What about other schools – are they routinely tested for chemicals such as dieldrin in the soil?

The issue of dieldrin contamination relates to prior historical agricultural use. Existing schools are not routinely tested for chemical contamination. However, the Department of Education and Training takes health and safety in our schools extremely seriously. Where there is any indication of a risk to health or safety in schools, the Department undertakes appropriate investigations and employs conservative risk mitigation strategies, with assistance from technical experts.

Will other schools on the Bellarine Peninsula be tested?

The testing for historical chemical contamination is done before a school is built. This together with recent soil tests showing negligible levels of any chemical of concern, the Department of Education and Training has no current plans for further testing of school land on the Bellarine Peninsula. The requirements under the land planning scheme remain applicable for any amendments or applications where potentially contaminated land would be used.

Who can I talk to about the topics above?

For more information about land use, contaminated land, and environmental investigations visit:

<https://www.epa.vic.gov.au/your-environment/land-and-groundwater>

For more information about dieldrin, its effects on health, and public health investigations contact the EPA on 1300 372 842.

For more information about the historic use of dieldrin in agriculture or the management of farming properties with soil residues contact Agriculture Victoria on 136 186.

For information on schools testing contact the Department of Education and Training on 1300 333 232.

About the review of cancer rates on the Bellarine Peninsula

What prompted a review of cancer rates on the Bellarine Peninsula?

In December 2018, the media reported a pending class action and a potential cluster of cancers on the Bellarine Peninsula involving ex-students and teachers from local schools, thought to be related to the historical use of the pesticide dieldrin. No one affected or on their behalf has contacted the Department of Health and Human Services to advise of details. Given this, the Acting Chief Health Officer reviewed cancer incidence data for the Bellarine Peninsula using The Australian Cancer Atlas. The report is now publicly available on the Department of Health and Human Services website.

What did the review find?

The review found no unusual excess of cancers thought to be associated with dieldrin.

The primary source of data was the Australian Cancer Atlas, which includes comprehensive cancer incidence data for all of Australia by geographical area. The notification of cancers to State and Territory cancer registers has been mandated for a number of years and the Atlas is considered to provide comprehensive coverage of all cancers diagnosed. This data can be used to analyse rates of cancer both across the country and in smaller localised areas. If a concern about an unusually high number of cancers is raised, the data can be used to determine if a higher than expected number of cancers has been diagnosed in the area in previous years.

The Chief Health Officer reviewed cancer incidence rates for total cancers, breast and liver cancer, and non-Hodgkin lymphoma, multiple myeloma, brain cancers and leukaemia.

Analysis of these data indicated there is:

- no evidence of a higher rate of total cancers in any geographical areas of the Bellarine Peninsula than elsewhere in Australia
- no higher number of the specific cancers related to dieldrin (breast or liver) than would be expected (based on the average cancer rates in Australia)
- no higher number of cancers mentioned in the media (non-Hodgkin lymphoma, multiple myeloma, brain cancers and leukaemia) than would be expected (based on the average cancer rates in Australia)

Who can I talk to about the topics above?

You can find more detail about the review in the Chief Health Officer's report, which is available online at:

<https://www2.health.vic.gov.au/public-health/chief-health-officer/cho-publications/cancer-rates-bellarine-peninsula>

If you have concerns about your health or the health of your family, talk to your doctor or another health professional.

About cancer

For excellent general information regarding cancer, please visit the Cancer Council website:

<https://www.cancervic.org.au/cancer-information>

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