

# Human Health



Watch the video explanation

## INTRODUCTION

This factsheet explains how the health impacts of the Woodlawn Advanced Energy Recovery Centre (ARC) have been assessed as part of the Environmental Impact Statement (EIS).

## ARC HUMAN HEALTH RISK ASSESSMENT (HHRA) AT A GLANCE

Independent experts have carried out detailed assessments of the predicted impact of the ARC on human health and the environment. The HHRA assessment has shown the following results:

- ✔ The assessment has found that emissions from the ARC would not present a risk to human health.
- ✔ The assessment shows that ARC emissions will be safely within the NSW government regulations and guidelines for human health, water quality and food production.
- ✔ Water concentrations from ARC emissions within drinking water tanks will be safely within drinking water guidelines.
- ✔ The assessment has found that water quality in the lakes would not be affected.
- ✔ The introduction of the ARC project will not change local soil conditions.
- ✔ Farms with organic farming status would not be affected.

**The assessment has found that emissions from the ARC would not present a risk to human health.**

## REGULATION

**There are strict rules on managing human health.**

There are strict rules on managing impacts to human health for projects that result in emissions to air. These rules are set using guidance from enHealth, the National Environment Protection Council and NSW state health authorities, including the NSW Chief Scientist. They are then regulated by the NSW Environment Protection Authority.

## HUMAN HEALTH IMPACT ASSESSMENT

**Detailed Human Health assessments have been undertaken as part of the planning process, and are available in Chapter 8.2 of the EIS.**

The assessments looked at how people might be exposed to emissions in the short and long term, and whether or not this would impact human health. The HHRA for the ARC followed the strict principles outlined in the federal Environmental Health Standing Committee (enHealth) document Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards (2012) and NSW Chief Scientist (2020) advice.

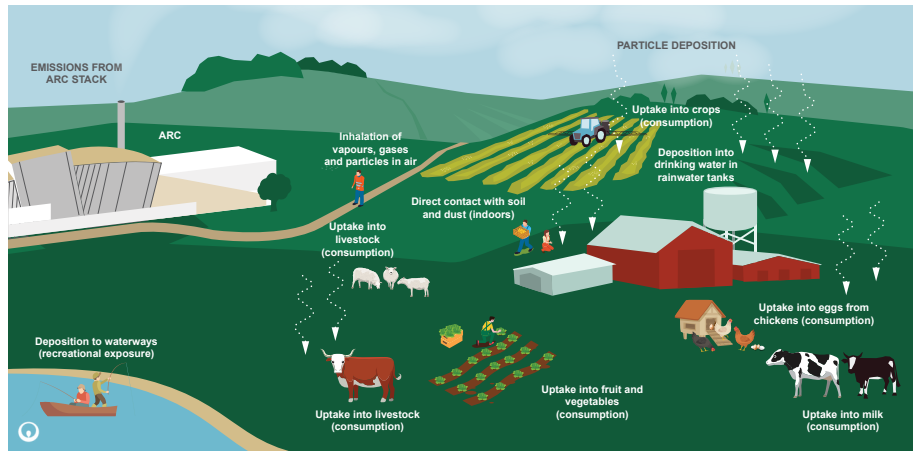
This approach required the assessment of:

- ✔ **Exposure** to air emissions over both short-term (acute) and long-term (chronic) periods.
- ✔ **Hazard or toxicity** of potential hazards posed by chemicals in emissions.
- ✔ **Calculation of potential risks** to health or the nature of potential health risks.



The Human Health Risk Assessment looked at the different ways people could be impacted by emissions from the project, including:

- **INHALATION**
- **INCIDENTAL INGESTION OF INDOOR DUST AND SOIL**
- **SKIN CONTACT**
- **EATING OR DRINKING LOCAL PRODUCE**  
including fruit and vegetables, milk, eggs, and meat
- **DRINKING WATER**  
collected from roofs in rainwater tanks
- **SWIMMING IN LOCAL LAKES AND RIVERS**



## WATER QUALITY

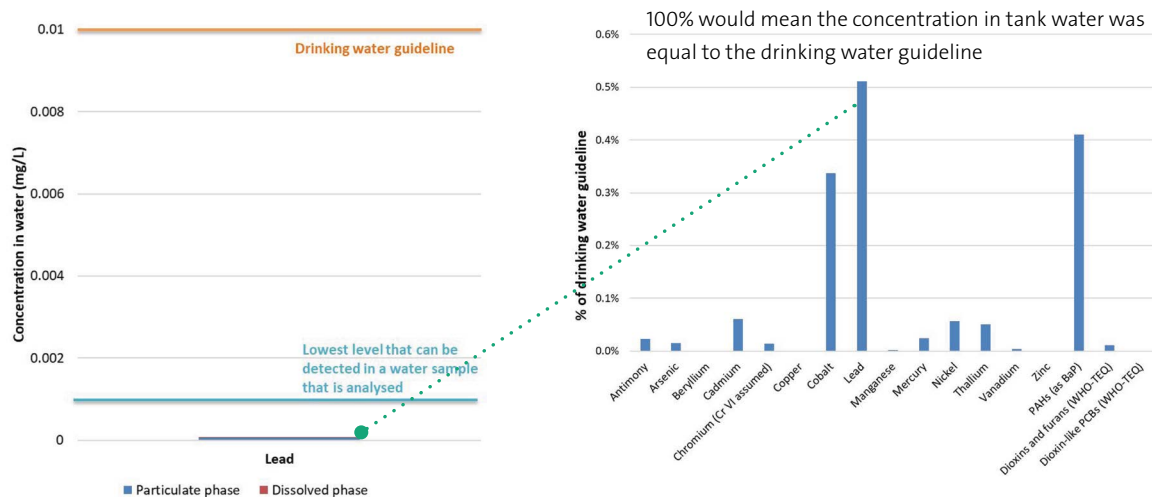
**Water quality will not be affected by the ARC.**

The Human Health Risk Assessment considered the impacts of the project on the quality of water in rainwater tanks at residential and rural properties near the site. It also looked at the impact on groundwater quality and recreational water quality in Lake George and Lake Bathurst.

### RAINWATER TANKS

For many properties in the area, drinking water is sourced from rainwater tanks. The assessment has shown that predicted water concentrations in tanks from ARC emissions will be well within drinking water guidelines.

The below graph shows the maximum concentrations in rainwater tanks from ARC emissions as a percentage of the Australian Drinking Water Guideline. The graph shows that concentrations from the ARC are well within safe drinking water limits for human health. In fact, the concentrations are predicted to be so low that they would not even be detectable using the best available analysis technology.



## GROUNDWATER QUALITY

Some properties in the area source drinking water from groundwater. The potential for ARC emissions to deposit onto the ground and change water quality in groundwater has been assessed and determined to be negligible.

## RECREATIONAL WATER QUALITY

There are two large bodies of water in the region, Lake Bathurst and Lake George, both of which are used for recreational purposes including fishing, swimming and boating. The assessment has found that water quality in the lakes would not be affected by emissions from the ARC. As there will be no measurable changes to water quality in the lakes, there would not be any impact on fish species that may be caught and consumed from the lakes.

## FOOD PRODUCTION

**Emissions from the ARC will not have a detrimental impact on crops and produce grown in the local area.**

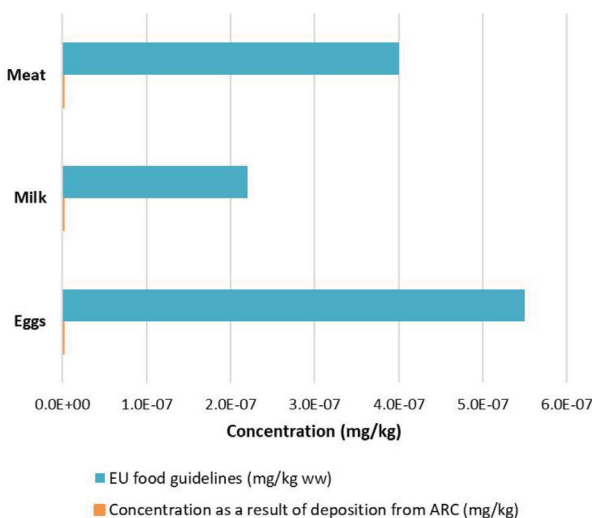
The area around the Woodlawn Eco-Precinct is rural; land uses in the locality include raising cows, lambs, sheep, horses, truffles, alpacas and crop production including, but not limited to, vineyards, oats, barley and canola.

The Human Health Risk Assessment has looked at the potential impact of air emissions from the ARC on crops and produce grown in the area. The assessment has shown that there would not be any measurable change in soil quality as a result of emissions, nor would the project change existing soil conditions or water quality. Farms with organic farming status would not be affected.

The study looked at the impact of food consumption of homegrown produce from the area, including fruit and vegetables, eggs, milk, beef and lamb. It also considered the sale of crops and produce into the commercial market, where there are strict limits on the amount of chemicals and metals allowed to be present under the Food Standards Code. Results showed that the maximum predicted concentrations in local produce would be well below limits prescribed in food standards.

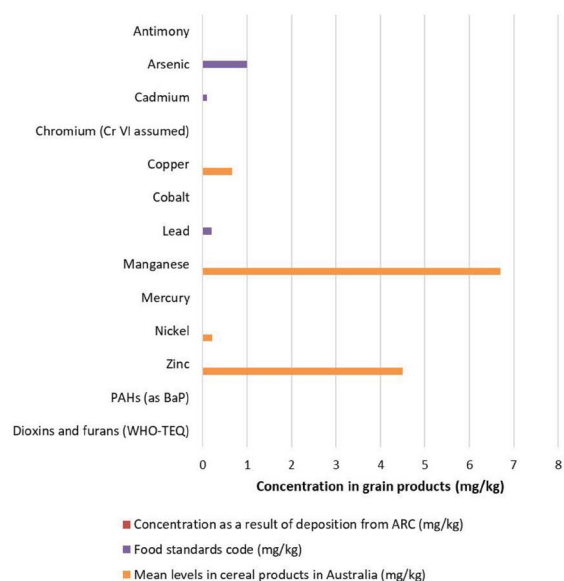
### PRODUCE

The graph shows the European Union maximum (safe) levels of dioxins and furans in food in blue, which have been adopted in the absence of Australian regulations. The ARC concentration levels are in orange, showing the levels are well within safe limits.



### GRAIN PRODUCTS

The graph shows the concentration levels as a result of the ARC in red. These are so low that they are barely detectable on the graph. The purple bar represents the safe food standards code, where regulated. All ARC concentrations are well within these limits, meaning there is no unsafe impact to produce. The orange bar represents the average concentration in cereal products in Australia.



## SOIL QUALITY

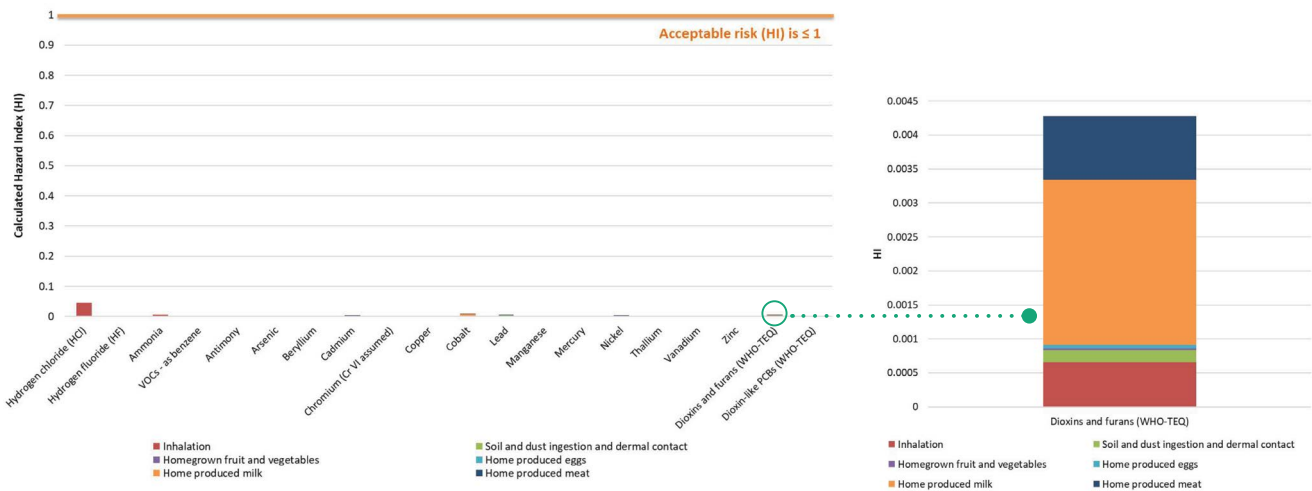
### Emissions from the ARC will not be detectable in soil.

The assessment looked at the impact of emissions from the ARC on soil. The assessment used very conservative assumptions, including the theoretical scenario that deposits would occur continuously for 70 years (despite this surpassing the expected life of the facility) and that there would not be any other top soil, soil conditioner or fertiliser used (which would reduce concentrations of chemicals in surface soil).

Results show that emissions from the ARC will be so negligible they are not detectable in soil and that the maximum predicted levels of chemicals in the soil will be well below soil guidelines, for both residential and recreational use.

### AIR EMISSIONS

The below graph shows the predicted maximum exposure to air emissions from the ARC. The limit of 1 represents the maximum acceptable risk, or hazard index (HI). The graph shows the calculated risks are well within acceptable limits. A micro-view of the dioxins and furans level is also provided.






## MONITORING

If approved the facility would be subject to strict regulation by the NSW Environment Protection Authority, who will set the operating licence and rigorously monitor ongoing operations.

## FOR FURTHER INFORMATION

Further details of the human health risk assessment for the ARC are available in Chapter 8.2 of the EIS.

If you would like to understand more about the human health risk assessment, or would like to talk to one of our team members about the project, please contact us via:

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