

## Clovelly Park TCE, DCE and Vinyl Chloride Contamination

### FAQs

#### How did the EPA become aware of the contamination?

As part of its environmental site investigations, Mitsubishi has installed bores on the perimeter of its Clovelly Park site. Testing of these bores has found levels of trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride in groundwater and air voids within the soil (soil vapour). Mitsubishi advised the EPA of these findings.

#### What is TCE?

Trichloroethene (TCE) is an industrial chemical used widely as a metal cleaner and degreaser. In the past, TCE was used in many other applications including: dry-cleaning, extracting caffeine from coffee beans to make decaffeinated coffee and as an anaesthetic gas in hospitals.

#### What are DCE and vinyl chloride?

Dichloroethene (DCE) and vinyl chloride are chemicals that can be formed from the breakdown of TCE in the environment. Both DCE and vinyl chloride are also chemicals that have industrial uses in their own right. DCE and vinyl chloride could have been introduced directly into the area or be present as a result of the breakdown of TCE.

#### Who is responsible for the contamination?

At this stage, the EPA is unsure who has caused the contamination. There are several potential sources in the vicinity of the detected contamination.

#### What is the EPA doing to determine the source of the contamination?

The EPA is investigating potential sources of contamination in the area. This investigation includes a desktop study of historical activities undertaken in the area and having discussions with local businesses that could be potential sources.

**How did TCE and the other related chemicals (DCE and vinyl chloride) get into the air and the soil in the residential area?**

TCE and its breakdown products are liquid chemicals that readily flow and evaporate when released to the environment. Depending on how the chemicals were introduced to the soil, and the geology of the underlying soil and rock, it is possible that these chemicals migrated through the pores in the soil, dissolved in water and then flowed down gradient or moved directly as vapours from the source or became present through breakdown chemical reactions.

Liquid TCE is denser than water, and will sink down through water until it reaches an impermeable barrier. In its pure form it will then flow along preferential pathways via gravity or pool in confined areas. TCE that is dissolved in water will migrate with the groundwater in the general direction of groundwater flow. TCE vapour will move through soils via the path of least resistance.

**Why haven't we heard anything about the possible risk to indoor air quality from this contamination until now?**

Late last year the EPA received notification from Mitsubishi that it had found TCE and the other chemicals in soil vapour at the boundary of the Mitsubishi site, four metres below the ground surface. This was the first time that EPA and SA Health became aware that these chemicals were present in the surrounding residential area and closer to the ground surface.

Upon learning of the contamination, the EPA and SA Health advised local residents and jointly undertook shallow soil sampling on Council property within the residential area to determine whether any of these chemicals were present. EPA received the results of this sampling just prior to Christmas. The results showed that TCE and the other related chemicals were present in the soil vapour in the residential area.

EPA and SA Health now consider that it is sensible to test the indoor air quality in houses in the area. This will allow SA Health to undertake a human health risk assessment to determine whether there is any health risk to people living in the area.

**What sampling has EPA/SA Health undertaken to date?**

On learning of the contamination of the soil vapour on the boundary of the Mitsubishi site, the EPA and SA Health jointly undertook shallow soil sampling on Council property within the residential area to determine whether the chemicals of concern were present. The EPA received the results of this sampling just prior to Christmas. The results showed that TCE and other related chemicals were present in the soil vapour in the residential area.

EPA and SA Health now consider that it is sensible to test the indoor air quality in houses in the area. If these chemicals are found in the indoor air, the results of the testing will allow SA Health to undertake a human health risk assessment to determine whether there is any health risk to people living in the area.

### **Why is it necessary to sample the air quality within houses?**

The results of the sampling done to date only inform us that TCE and other related chemicals are present in soil vapour near the surface in the residential area. Without further sampling, it is not possible to say whether people are being exposed to these chemicals, and if so, at what level.

It should also be noted that people are exposed to 'background exposures' in our everyday life (see the FAQ 'Are we exposed to TCE and its breakdown products in the community?')

In the event that TCE and related chemicals are found in the air in houses, the results from the indoor air sampling will be used by SA Health to conduct an exposure assessment for people living within the area. This assessment will then determine any health risk that may be present.

### **How will the indoor air sampling in houses be undertaken?**

Indoor air quality will be sampled by using special steel canisters that draw in a known quantity of air over a 24-hour period. The canisters will then be sent to an accredited laboratory and the air trapped inside them will be analysed.

The canister sampling technique has been chosen because it is very sensitive in detecting chemicals in the air and is very accurate, while causing little noise and disturbance to households.

Samples will be collected from different locations in houses, including living and sleeping areas.

As part of the sampling program, EPA will also test the ambient (outdoor) air in the area, so that it can be compared with the air inside the houses. The air in one or two house located away from the area will also be tested to provide further background information.

### **How many houses will be sampled?**

EPA and SA Health will initially jointly sample approximately 30 houses/flats.

### **How long will it take to get results from the air sampling within houses?**

Once the samples are collected they will be immediately sent to an accredited laboratory for analysis. It is expected that results of the sampling will be received in about a month.

### **What if I don't want the air in my house sampled?**

Permission will be sought from owners and occupiers prior to the commencement of indoor air sampling. The EPA and SA Health strongly recommend that the sampling be undertaken, however the final say as to whether the testing is undertaken will rest with the owner/occupier.

### **What will the government do if TCE and other related chemicals are found in the indoor air in houses?**

If TCE and/or the related chemicals are found in the indoor air in houses, the appropriate action to be taken will depend on which chemicals are found and at what levels. The human health risk assessment to be conducted by SA Health will be used to determine what action is appropriate.

In the event that TCE and/or its breakdown products are found, appropriate actions may include:

- No action, as the chemicals are considered to be present at safe levels.
- Periodic monitoring to check variation in the levels of the chemicals in air over time.
- Temporary relocation to other accommodation.
- Remediation measures to reduce the level of the chemicals in indoor air to safe levels. For example, this could include modifications to the ventilation in affected houses, the installation of a subsoil gas extraction network, source treatment/removal, etc.

It is not possible to predict at this time what, if any, management actions may be required.

### **Is it safe to breathe the outdoor air in the area?**

As these chemicals are likely to be emitted at a very low rate from the soils and quickly dispersed in the outdoor air, EPA and SA Health have no concerns about the outdoor air quality in the area.

To confirm this, outdoor air quality will be tested in conjunction with the indoor air quality sampling program.

### **How were the houses to be sampled chosen?**

Houses to be sampled fall within the area where TCE and other related chemical substances were detected during the sampling conducted on Council land during December.

### **I live in the area adjacent to the area where the houses are being sampled—what testing is being done to prove that my house is safe to live in?**

At this time, the EPA holds no information about the presence of chemicals in the residential area outside of the area where indoor air sampling is being conducted.

As a matter of priority, the EPA and SA Health are conducting an expanded sampling program on land adjacent to the area where indoor air sampling is being undertaken. This will allow us to delineate the extent of the soil vapour plume in the same way that was done for the area where indoor air sampling is being undertaken.

Results from this passive sampling program are expected to be available within about a month. Depending on these results, and the results from sampling indoor air that is in the process of being undertaken, it may be necessary to conduct indoor air quality sampling over a wider area.

### **How can contact with TCE and the other related chemicals occur if they are in groundwater (borewater)?**

Exposure can occur if contaminated groundwater is used for drinking or cooking and in showers, swimming pools and watering gardens (via ingestion, inhalation or through the skin).

### **How can contact with TCE and the other related chemicals occur if they are present in the air voids within the soil?**

Exposure can occur if the chemicals migrate through the soil pore spaces to the ground surface, and then find their way through cracks and holes in the slab, floor or walls of the building. If ventilation is low, vapours may then accumulate within building spaces and be inhaled by persons in the building.

### **What happens when TCE enters the body or the environment?**

If TCE is taken into the body, it is then metabolised (broken down) and eliminated from the body within days. In the environment, TCE breaks down rapidly in air and surface water but much slower in soil and groundwater. TCE breaks down into dichloroethene and then vinyl chloride which can then degrade to other products.

### **How can TCE and its breakdown products affect health?**

The effects on human health depend on a number of factors, such as how long people may be exposed, and how much of each chemical is present. Other factors include a person's health and age.

### **Are we exposed to TCE and the other related chemicals in the community?**

Exposures to these chemicals may occur in the general community, for example, vinyl chloride is found in tobacco smoke while TCE can be found in some household products such as typewriter correction fluid and paint or spot removers.

Dichloroethene exposure can result from use of perfumes, lacquers and some plastics (eg thermoplastics). These types of exposures are referred to as 'background exposures'. As exposures to chemicals occur from many sources in our everyday life, it is important that when there is a chance of exposure occurring that can be reduced or eliminated, action is taken.

It needs to be recognised that exposure to any one chemical often occurs from multiple sources to varying degrees and it is important to reduce total exposures to the lowest amount possible. This is to ensure total exposure levels are below those that may produce effects on health.

### **Further information**

For further information on health related queries, please contact SA Health on 8226 7100

For contamination related enquiries, please contact the EPA during office hours on 8204 9934