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The 2004 and 2007 blood samples taken from both Rhodes residents and 'blood bank' volunteers were pooled by the National Measurement Institute. This resulted in four samples for analysis. Pooling was appropriate because the study is interested in an average or overall change in dioxin levels in residents. This means that individual results are not available. Pooled specimens were sent to Germany for analysis.

There are a large number of different dioxins and dioxin-like chemicals. Some dioxins are more toxic than others. The World Health Organisation gives a method for calculating a "summary toxicity equivalent" for the mix of dioxin chemicals in any sample. This method gives the result in toxicity equivalents (TEQs). The results below are presented in units of picograms (pg) of

TEQ per gram (g) of fat. A picogram is one millionth of one millionth of a gram.

**Table: Level of dioxins in the blood of residents and blood bank volunteers in 2004 and 2007\***

	2004	2007
Residents blood (pooled)	13.9 pg /g	13.3 pg /g
Blood bank volunteers (pooled)	12.3 pg /g	10.3 pg /g

\*All results expressed in WHO2005-TEQ (World Health Organisation 2005 toxicity equivalents)

**From 2004 to 2007 there has been a slight decrease in the levels of dioxin in the serum of all participants. Importantly, no increase in the dioxin levels of residents has been observed since remediation began.**

In general, the level of dioxins in the serum of residents appears to be higher compared to the blood bank volunteers for both the

initial and mid point time periods. If at completion of the study, analysis confirms this finding, it would be consistent with higher background exposure in residents during the past decades.

Overall, the results are very similar to those that have been found generally in the population of South East Australia and well below levels known to be associated with adverse health effects.

These results are a summary and full results with interpretation will be available on the NSW Department of Health website in the near future.

For further information visit [http://www.health.nsw.gov.au/PublicHealth/environment/hazards/env\\_rhodes.asp](http://www.health.nsw.gov.au/PublicHealth/environment/hazards/env_rhodes.asp) or contact **Nathan Aust** at the Environmental Health Branch on **9816 0256**.

*(Article provided by NSW Department of Health.)*

**The Rhodes Community Consultative Committee (RCCC)**

The RCCC is comprised of approximately 20 residents from communities surrounding the Rhodes Peninsula including Rhodes, Concord West, Homebush Bay, Liberty Grove, Meadowbank, West Ryde and Melrose Park. An additional 20 members represent developers and remediators working in the area; State Government Departments such as the Department of Planning, the Department of Health, and the Department of Environment & Conservation; and Local Government Councils such as the City of Canada Bay Council and Ryde Council. At monthly meetings the committee is presented with updates and data on the remediation and development projects by the proponents involved. The RCCC has an independent Chairperson, **Mr John Kent**. John's contact details are **0419 497 033** or **jk@wwsydney.com**. You are most welcome to join the committee or attend a meeting as a visitor. For information about the next meeting, please call the Thies Services Community Contact Line on **1800 009 414**.

**Project Activities - the next 3 months**

**Lednez & Homebush Bay project**

- Undertake DTD treatment plant commissioning trials and Proof of Performance test;
- License full scale operations;
- Continue full scale thermal treatment operations;
- Start depleting stored soil requiring thermal treatment;
- Continue Stage 3 excavations;
- Progress Stage 3 backfilling operations;

- Progressively validate Stage 3 area;
- Construct sections of seawall in Stage 3 area;
- Install sewer in Stage 3 area;
- Continue environmental monitoring;
- Continue bay works excavation and reinstatement (southern stage).

**Allied Feeds project**

- Excavation of contaminated soil requiring thermal treatment;
- Process soil in the pre-treatment building;
- Commercial scale thermal treatment

- operations;
- Test/validate excavated surfaces and treated materials;
- Progressively backfill and reinstate validated areas to the final development site ground levels;
- Demolish and reconstruct the southern section of the seawall;
- Water treatment plant operations;
- Construction of stormwater pipeline infrastructure;
- Environmental monitoring including DTD plant and pre-treatment building stack compliance tests.

**Community Contact Details**

We value your feedback. If you have any questions or concerns, please let us know.  
**Ph:** 24 hour toll free line: 1800 009 414 **E-mail:** rhodesremediation@thiess-services.com.au  
**Web:** www.rhodesremediation.com.au **Post:** 40 Walker Street, or PO Box 3064, Rhodes NSW 2138  
**Thank you for your cooperation and patience during these environmental remediation works.**



**24 hour toll free line**  
**1800 009 414**  
[www.rhodesremediation.com.au](http://www.rhodesremediation.com.au)

**NEWSLETTER**  
 July 2008, Issue 11

To the Community Member  
 Rhodes Remediation Projects  
 Community News

**Phase 2 Results**  
**Rhodes Serum Dioxin Study**

**Register now for a Site Tour**  
**Saturday, 10:30am**  
**23<sup>rd</sup> August, 2008**  
[rhodesremediation@thiess-services.com.au](mailto:rhodesremediation@thiess-services.com.au)  
 or 1800 009 414

Welcome to issue eleven of the newsletter for the Thiess Services Rhodes Remediation Projects ...aimed at keeping the community informed of the remediation activities underway.

- In this issue:**
- Rhodes blood serum dioxin study
  - New air quality response levels
  - Project activities: next 3 months

**Phase 2 of the Rhodes Serum Dioxin Study has found no increase in levels of blood (serum) dioxin in residents since remediation began. Levels of dioxins in local residents remain well below the levels known to be associated with adverse health effects.**

We have all been exposed to various low levels of dioxin chemicals because they are present in the environment and are fat-soluble. Humans obtain ninety per cent of their exposure to dioxins from the fats in their diet – primarily from fish, dairy, egg and meat products.

The former Lednez Union Carbide and Allied Feeds industrial sites were contaminated as a legacy of the chemical industry. Organochlorine herbicides 2,4 D and 2,4,5 –T and insecticides such as DDT were manufactured at the sites. Dioxins are a by-product of organochlorine manufacture and have created significant soil contamination on the Rhodes sites.

Dioxins have been linked with various health problems. At concentrations over 100-1000 times above those experienced by the ordinary population, higher rates of cancer have been observed. At lower levels there is some evidence from animal studies of effects on hormonal balance.

The Rhodes Serum Dioxin study was designed as an additional monitoring measure as part of the pre-project consultation process. The study measures if the dust or emissions from the sites during clean-up exposes residents to dioxins.

Volunteer residents in the Rhodes area gave blood samples in 2004 before the clean-up began, in 2007 at the mid-point of clean-up and will give blood when the clean-up is complete. Levels in these blood samples were compared with control samples from 'blood bank' volunteers taken at the same time.



Above: Remediation of the former Allied Feeds site in March.

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## New Air Quality Response Levels

Community-focused air quality “response levels” have recently been introduced on the Lednez remediation project. The new response levels will help reduce the odour sometimes noticeable in the community when soil and sediment containing chemical residues is excavated.

### THE CLEAN UP CONTINUES

Thiess Services has been contracted to remediate two neighboring sites at Walker Street, Rhodes. The sites are known as the former Lednez/ Union Carbide site and the former Allied Feeds site. Both sites require remediation (a clean-up of the soil) as a result of past chemical manufacturing works on the former Lednez/Union Carbide site. Remediation works commenced in 2005.

For more details on the history of these sites, to view environmental information or to download copies of the newsletters, visit [www.rhodesremediation.com.au](http://www.rhodesremediation.com.au)

Strict environmental controls and standards are being implemented on both sites to ensure the health and safety of workers and the community. All work is being undertaken in close consultation with Local Government and community members, as well as with State Government agencies including the Department of Environment and Climate Change, NSW Waterways, the Department of Planning and NSW Health.

Monitors have been set up on the boundaries of the site to measure the level of volatile organic compounds (VOCs) in the air 24 hours a day, seven days a week. Engineers are notified when particular response levels (RLs) are reached through a remote alarm system. The response levels are protective of human health.

### What are VOCs?

The most odorous chemicals found on the remediation sites belong to the group known as volatile organic compounds (VOCs). When soil or sediment that contains VOCs is excavated, the compounds “volatilize”, or become vapour, creating odorous emissions in the atmosphere. Hours after excavation activities have finished, volatilization may still be occurring, although at a reduced rate.



Above: Continuous VOC monitoring for air quality, 24 hours a day, seven days a week.

### How long have VOCs been monitored?

Since the Rhodes Remediation Projects commenced, the level of VOCs found in the air have been monitored.

Throughout the day, environmental officers use photo-ionisation detectors (PIDs) to measure VOC levels at site boundaries and where excavations are taking place.

Another form of monitoring, “continuous VOC monitoring” was introduced on the Lednez project when VOC emissions from a particular soil excavation area intensified during May and June 2007. Monitors that operate continuously were installed on site boundaries so that air quality data could be recorded non-stop, without an environmental officer needing to be present.

### Response Levels (RLs) for Continuous VOC Monitoring

A response level (RL) is a level at which particular actions will occur should the level be reached. In the case of on-site VOC monitoring, it is when VOCs in air reach a particular concentration level as measured in parts per million (ppm).

To enhance the continuous VOC monitoring program, three community-focused response levels have now been set. These supplement the response levels for occupational health and safety that have been in place since the projects commenced.

The continuous VOC monitoring response levels were set for the project in close consultation with NSW

Health, independent health risk consultants and the Department of Environment and Climate Change (DECC). They are designed to keep VOC emissions below levels that would exceed acute public health risk advisories in the short term and chronic

public health risk advisories in the long term. They also relate to measurements taken at site boundaries, not at excavation areas, because boundaries are where the worksite adjoins the residential and commercial neighbourhood.

### If RL1 is triggered (a 1 ppm average over 60 minutes):

- Continuous VOC monitoring is maintained at site boundaries;
- An environmental officer takes a ten minute PID reading of VOC levels in the area of the exceedance;
- Thiess Services investigates the source of the VOC emission;
- The DECC and NSW Health are notified on the day of the exceedance;
- Within three business days, continuous monitoring results from the day of the exceedance are provided to the DECC and NSW Health; and
- If RL 1 is exceeded for longer than 24 hours, an e-mail notification is sent to community members who are registered for the “odour alert” service\*.

Possible measures to reduce the VOC emissions and odour level include (but are not limited to):

- a reduction in the pace of work;
- a delay until wind conditions are more favourable;
- the use of odour suppressants; and
- a minimisation or relocation of the excavation area.

### If RL2 is triggered (a 2 ppm average over 30 minutes):

- Continuous VOC monitoring is maintained at site boundaries;
- The measures to reduce VOC emissions and odour listed for RL1 are implemented or maintained; and

- The advisories to the DECC and NSW Health are maintained.

Additionally:

- An environmental officer conducts PID monitoring continuously at the excavation area;
- Cover is applied to trucks transporting loads of excavated material on site; or, transportation is reduced or stopped;
- Exposed excavation faces are covered with tarpaulins, clean soil, mulch or a special foam; and



Above: Monitoring VOC levels in the air where excavations are occurring with a photo-ionisation detector.

- If RL2 is exceeded for longer than eight hours, an e-mail notification is sent to community members who are registered for the “odour alert” service.

### If RL3 is triggered (a 3 ppm average over 30 minutes):

- Continuous VOC monitoring is maintained at site boundaries; and
- The measures to reduce the VOC emissions and odour listed for RL2 are implemented or maintained;

Additionally:

- VOC samples are collected at the site boundaries for a period of 24 hours so that the individual chemicals contained within the samples can be assessed;

- A sample is collected over a 72-hour period at the site boundary affected by the exceedance and analysed for semi-volatile organic compounds (SVOCs);
- Works deemed to be contributing to VOC emissions stop;
- The DECC and NSW Health are notified within three hours.
- Within one business day, continuous monitoring results from the day of the exceedance are provided to the DECC and NSW Health; and

- If RL3 is exceeded for longer than four hours, an e-mail notification is sent to community members who are registered for the “odour alert” service.

### Resumption of Normal Work Practices

Work will only be permitted to resume following an exceedance

of RL3 when the total VOC emission levels have fallen below RL1 for a period of 30 minutes i.e. 1 ppm measured at the site boundary.

### Website Graphs

Graphs showing the average daily concentration levels of VOCs found in the air at project site boundaries can be viewed at

[www.rhodesremediation.com.au](http://www.rhodesremediation.com.au)

\* The “odour alert” service is an e-mail notification service that advises people when odour from excavation works may be noticeable in the local community. To register for this service send your name, address, phone number and e-mail address to:

[rhodesremediation@thiess-services.com.au](mailto:rhodesremediation@thiess-services.com.au) or call 1800 009 414.