NZ tackles methyl bromide head on with radical new technology

New Zealand's CentrePort in Wellington has introduced mandatory technology to use for recapture of gas methyl bromide, reports ANASTASSIA PERETS

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TEST BED: Wellington's CentrePort is porting new technology to work ahead of a 2020 deadline. Inset – Ken Fitzpatrick of Nordiko.

METHYL bromide is a colourless, odourless and tasteless poison that is potentially deadly to humans when exposed to large amounts.

The result of exposure to the chemical can be fatal if the gas is inhaled, swallowed or absorbed through the skin.

Its deadly quality also makes methyl bromide effective in killing pests like spiders, insects, fungi, weeds and rodents according to the US National Pesticide Information Centre.

It works by expanding to fill all of an enclosed space and will penetrate cracks, crevices, pores and other such spaces.

New Zealand's Environment Protection Agency (EPA) has set a deadline of 2020 – first introduced in June 2011 – for all methyl bromide fumigations in the country to use recapture technology.

CentrePort's recent introduction of the new and advanced technology is an early move towards that goal.

The equipment, designed by Nordiko, is able to capture the fumigant simultaneously from multiple containers.

Following fumigation procedure, the product is neutralised with another chemical and goes to landfill.

Nordiko general manager Ken Fitzpatrick said the new technology could possibly improve the logistics chain at the port because less time will be spent ventilating containers.

"It generally takes 12 to 15 hours to ventilate a container without the system, but it takes just two to three hours with it," he said.

Mr Fitzpatrick added that the length of time it takes to ventilate a container varies with how tightly it is packed as well as on weather conditions.

Implementation

He added: "The technology has been around for some time, but what's exciting is that Wellington has decided to implement their own early phase of the 2020 ruling and a few developments, such as plastic doors on the containers, have made that possible."

As a result of the implementation of the procedure, any containers coming to Australia from Wellington will have had the gas properly cleared.

Methyl bromide has been identified as a dangerous gas under the Montreal Protocol – an international treaty signed by 197 countries – and has been phased out in many parts of the world.

Milder possible effects of the poison include headache, dizziness, nausea, vomiting, tremor, slurred speech and irritation to eyes, respiratory system and skin according to the US Centre for Disease Control and Prevention.

Though methyl bromide use has been banned in Australia since 2005, it is allowed in certain situations such as quarantine and pre-shipment treatment for imports and exports which use about 300 tonnes of the chemical per annum.

It is also allowed in soil fumigation in the production of strawberry runners, which is responsible for less than 40 tonnes of use per annum.

Lastly, it can also be used as a feedstock in chemical reactions to create other chemicals but that uses less than one tonne per annum.

Methyl bromide serves a similar purpose in New Zealand where it is used to fumigate imported goods being held in quarantine and some export products.

Even if a container has been fumigated and ventilated, there is the chance that the container will still contain a high quantity of methyl bromide due to poor venting procedures.

Aside from the possible effects methyl bromide can have on humans, it has environmenally adverse effects.

In nature, methyl bromide is produced by sources including the ocean, plants and soil.

Manufactured methyl bromide is made from naturally occurring salts that either come from underground brine deposits or highly-concentrated, above-ground sources.

When natural release is combined with extra release by humans, the effect contributes to thinning of the ozone layer.

The combined release increases the amount of UV radiation that can reach the earth's surface.

Since the gas's introduction in 1902, research began to identify an equally-efficient but safer alternative.

But, none that are as competent in killing pests have been found so recapturing methyl bromide stands as the current best solution.

A NZ Customs service report in 2012 indicated that 90% of shipping containers at CentrePort contained dangerous chemicals, including methyl bromide.

Out of the infected containers, 18% were above safe levels with less than 1% of containers displaying correct fumigant signage.

Approximately 10.5m tonnes of cargo is handled at CentrePort on an annual basis.

Forestry products which include logs, veneer and pulp are some of the most common types of cargo handled at the port – which often require to be fumigated by methyl bromide.

About 200 staff members are employed by CentrePort and around 4200 ships call at the port every year.

Methyl bromide effects

HUMAN death can occur when exposure to methyl bromide is generally somewhere between 1600 to 60,000ppm.

Past human exposure to methyl bromide demonstrate the effects of the gas at various levels.

During a two-week project in 1942, 90 workers were exposed to methyl bromide concentrations which were generally at a concentration of less than 35ppm.

Some of the workers developed symptoms within a few hours of working while for others, the symptoms delayed and developed several hours after the shift.

Out of the 90 personnel, 33 reported mild symptoms mainly comprising nausea, and headache being most common.

Another case study consisted of nine Dutch greenhouse workers who were exposed to methyl bromide five times the legal amount.

During their first day of fumigation, the methyl bromide level was 25ppm in the non-fumigated side.

On the second day, the levels ranged from 150 to 200ppm, poisoning all of the workers.

Eight experienced extreme nausea, repeated vomiting and dizziness. The last only felt a burning sensation in the throat.

Two workers went on to develop seizures while others complained of headache, nausea, ataxia, slurred speech, and a 'floating' sensation.

(Source: Prioritization of Toxic Air Contaminants – Children's Environmental Health Protection Act 2011)

Sydney's ferry fleet
Industry consultation

The NSW Government is modernising Sydney's ferry fleet to improve services and expand the network. The first stage of upgrading the fleet is an investment in six new Inner Harbour ferries which will start operating in 2016.

Transport for NSW is seeking to engage with organisations interested in participating in the supply of the initial six new vessels regarding (but not limited to):

- production capacity and alternatives
- vessel supply options
- vessel equipment options
- vessel financing options.

Information about the Request for Information process is available on the NSW Government e-tender website **https://tenders.nsw.gov.au**

Enquiries should be emailed to **ferry@projects.transport.nsw.gov.au**

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