(14)

SANDRA MOORE [redacted]

Good Morning

My name is Sandra Moore.
I have been a corporate accountant for 30 years.
I work in development.
Before that I worked in the health system as a registered nurse.

I recognise that society has issues that need solving, we need to deal with plastics, ideally to produce less, but failing that, recycle, safely.

My key concern with this proposal is INFORMED DECISION MAKING
In addition to the:

1. Health impacts;
2. The proximity to housing.
3. The credibility of the proponent;

If a facility is required, it should be in a safer location.

INFORMED DECISION MAKING

Doctors are legally required to obtain consent. The fourth requirements being - the consent must be informed (1).

Our decision makers should be fully informed and with all the facts, if we get it wrong it will be generational and deadly.

HEALTH IMPACTS

When I was nursing, I cared for patients with asbestosis, mesothelioma. I watched people die, slowly and painfully.

Have we learnt from the past?
Arsenic in makeup, radium painted on watch dials, strychnine, thalidomide, lead in paint, all great ideas at the time, many deadly.

Silicosis from Caeser stone, cancers from PFAS and corporations that are more focused on their bottom line, Dupont, James Hardie.

The health department said, "We don't have any comments on this proposal". (2) How can an informed decision be made with no commentary; health problems are top of the list.

More than 13,000 chemicals have been identified as associated with plastics. (3)

The list of chemicals of concern is long. (4)

PROXIMITY TO HOUSING

The fallout from Chernobyl in 1986 was detected in Sweden some 1100 kilometres away. (5)

I have been a local resident for over 18 years.
My [redacted] lives approximately 900 metres from the site.

Let's not wait for the cancer clusters.
Let's be proactive.
Locate this essential service away from residential areas.

CREDIBILITY OF PROPONENT

The *EPA Act* states that " the community has a right to be informed about planning matters that affect it" (6)

Yet most of the GHD reports commence with (7):

- *disclaims responsibility*
- *scope limitations*
- *recommendations based on assumptions*
- *disclaims liability arising from any of the assumptions being incorrect*
- *not independently verified*
- *unverified information, errors, omissions*

An SSD demands verified information without limitations.

Implausibly, Fire and Rescue NSW tell us that any toxic smoke would rise directly upwards. (8)
Do we live in a wind vacuum? (9-11)

When I make a mistake, it may incur a penalty and some interest.
When I was nursing a mistake could cost a life.
When the IPC make their decision, it could cost many lives.

Are there alternatives that are safer?

Has the government considered the Cat-HTR process? (12)

Mr Lyu is described as "an early investor". (13)
He is not a director of Plasrefine but the controlling shareholder. (14-18)
He has no affiliation with the local community.

He has patented a disinfectant solution that includes 80% ethanol. (19)
Ethanol is highly flammable and considered a volatile organic compound. (20)

Where are the studies on this solution, how will it be managed and stored?

Plasrefine will use processes that emit particulates and volatile organic compounds. What mechanisms will be in place if the machines fail, if the roller doors jam? Moulding requires the plastic to be melted. When you went camping as a child do you recall your parents saying don't put plastic in the fire, there was a good reason for that.

There are hundreds of toxic chemicals present in recycled plastic pellets. (21)

What about the 140 workers, their families and their potential exposure to toxins.
Will they end up statistics?

We are very fortunate in Australia; we have space.

The Department acknowledges it is difficult to accurately predict the nature and scale of social impacts....is that good enough? (22)

Have you seen Julia Roberts in the movie, Erin Brokovich?
Have you seen the Dark Waters movie about PFAS?

Once approval is in place, you can have a whole list of compliance rules but what happens if they are breached, a slap on the wrist, a penalty to be paid.

I want to tell my grandchildren that we did make the best decisions, used the best practices, prioritised them, as well as the environment and the future. We haven't in the past.

We need development.
We need to deal with plastic but sometimes being a NIMBY is the correct call.

Please consider that this may just not be the correct site.

Thankyou.

https://www.health.nsw.gov.au/policies/manuals/documents/consent-section-4.pdf

4.3. What are the requirements for obtaining a valid consent?

Four core criteria must be met:

- the patient giving consent must have **capacity**
- the consent must be **freely given**
- the consent must be **sufficiently specific** to the procedure or treatment proposed
- the consent must be **informed.**

Sandra Moore

From: [redacted] (South Western Sydney LHD)
Sent: Monday, 26 February 2024 3:22 PM
To: [redacted]
Subject: Moss Vale Plastics Recycling Facility(SSD-9409987)

[redacted]

We don't have any comments on this proposal.

Regards, John

Public Health Unit | Division of Population Health
South Western Sydney Local Health District
PO Box 38, LIVERPOOL BC 1871
[redacted]

Health
South Western Sydney
Local Health District

From: no-reply@majorprojects.planning.nsw.gov.au <no-reply@majorprojects.planning.nsw.gov.au>
Sent: Wednesday, February 14, 2024 12:15 AM
To: John Birkett (South Western Sydney LHD) [redacted] SLHD-PHUEHO <SLHD-PHUEHO@health.nsw.gov.au>; Kleete Simpson (Sydney LHD) [redacted] Isabel Hess (Sydney LHD) [redacted]
Cc: [redacted]
Subject: Moss Vale Plastics Recycling Facility(SSD-9409987)- Reminder of Due Date for Response to Planner

The Department is contacting you to remind you that the stage forecast date for the Response to Planner is currently 01/11/2023.

If you feel this task cannot be completed by this date please request an extension or revise the stage forecast date by signing in to your profile.

If you have any enquiries, please contact Emma Bamet on [redacted]

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning and Environment

NSW GOVERNMENT

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https://www.unep.org/resources/report/chemicals-plastics-technical-report

Report

Chemicals in Plastics - A Technical Report

03 May 2023

The report provides state of knowledge on chemicals in plastics and based on compelling scientific evidence calls for urgent action to address chemicals in plastics as part of the global action on plastic pollution.

Overview of the report

The "Chemicals in Plastics: A Technical Report" aims to inform the global community about the often-overlooked chemical-related issues of plastic pollution, particularly their adverse impacts on human health and the environment as well as on resource efficiency and circularity. Based on compelling scientific evidence, it further highlights the urgent need to act and outlines possible areas for action. It also aims to support the negotiation process to develop the instrument on plastic pollution based on United Nations Environment Assembly resolution 5/14. The report outlines a set of credible and publicly available scientific studies and initiatives focused on chemicals in plastics and the science-policy interface.

The report was developed by UNEP in cooperation with the Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the Stockholm Convention on Persistent Organic Pollutants, with lead authors from the International Panel on Chemical Pollution, as well as contributions from key experts.

Some key findings

- Based on the latest studies, more than 13,000 chemicals have been identified as associated with plastics and plastic production across a wide range of applications.
- Ten groups of chemicals (based on chemistry, uses, or sources) are identified as being of major concern due to their high toxicity and potential to migrate or be released from plastics, including specific flame retardants, certain UV stabilizers, per- and polyfluoroalkyl substances (PFASs), phthalates, bisphenols, alkylphenols and alkylphenol ethoxylates, biocides, certain metals and metalloids, polycyclic aromatic hydrocarbons, and many other non-intentionally added substances (NIAS).
- Chemicals of concern have been found in plastics across a wide range of sectors and products value chains, including toys and other children's products, packaging (including food contact materials), electrical and electronic equipment, vehicles, synthetic textiles and related materials, furniture, building materials, medical devices, personal care and household products, and agriculture, aquaculture and fisheries.
- Chemicals of concern in plastics can impact our health and our environment: Extensive scientific data on the potential adverse impacts of about 7,000 substances associated with plastics show that more than 3,200 of them have one or more hazardous properties of concern.

- Women and children are particularly susceptible to these toxic chemicals. Exposures can have severe or long-lasting adverse effects on several key period of a women's life and may impact the next generations. Exposures during fetal development and in children can cause, for example, neurodevelopmental / neurobehavioural related disorders. Men are not spared either, with latest research documenting substantial detrimental effects on male fertility due to current combined exposures to hazardous chemicals, many of which are associated with plastics.
- Chemicals of concern can be released from plastic along its entire life cycle, during not only the extraction of raw materials, production of polymers and manufacture of plastic products, but also the use of plastic products and at the end of their life, particularly when waste is not properly managed, finding their way to the air, water and soils.
- Existing evidence calls for urgent action to address chemicals in plastics as part of the global action on plastic pollution, to protect human health and the environment, and transition to a toxic-free and sustainable circular economy.

UNEP acknowledges the financial support from the Government of Norway, the Government of Sweden and the Government of Switzerland, for the development of the report.

Australian Government

Department of Climate Change, Energy, the Environment and Water

https://www.dcceew.gov.au/environment/protection/chemicals-management/chemicals-of-concern-plastics

Chemicals of concern in plastics

Empty, colored carbonated drink bottles. Plastic waste.

Plastics contain a range of different chemicals. These chemicals are added to change and improve the performance of the plastics. Some chemicals make plastic more flexible, some make them more resistant to heat and sunlight, and some are for colouring. It is estimated that by 2050, 2 billion tonnes of chemical additives will have been used in plastic.

While many of the chemicals that are added to plastics are useful and safe, some are chemicals of concern. These chemicals have concerning properties—for example, some do not easily break down and last for a long time in the environment, some are toxic, and some can build up to high levels in animals. Chemicals of concern are released into the environment over time from plastics. This can happen during manufacture, during use, or when the product becomes waste.

The following is a shortlist of chemicals of concern used in some plastics. These chemicals were short-listed based on information currently published in Australian risk assessments and global lists of high-concern chemicals. This list is intended for use by importers, exporters, manufacturers and retailers of plastic products, to inform environmentally sound product choices and contribute to global phase-out efforts.

Careful management of these chemicals, including by phasing them out of plastics, will help to reduce the load of chemicals of concern entering the environment.

The chemicals listed in Table 1 will be prioritised for future regulatory controls under the new Industrial Chemicals Environmental Management Standard (IChEMS).

Table 1. Chemicals of concern used as additives in plastics						
Abbreviation	Common name	CAS Registry Number	Reason for inclusion on the list	Used in	Concentration	Function
DEHP	Diethylhexyl phthalate	117-81-7	• High aquatic toxicity • Endocrine disruption concerns • SIN listed[1]	PVC	300 g/kg plastic	Plasticiser
DBP	Dibutyl phthalate	84-74-2	• High aquatic toxicity • Endocrine disruption concerns • SIN listed[1]	PVC	300 g/kg plastic	Plasticiser
BPA	Bisphenol A	80-05-7	• High aquatic toxicity • Endocrine disruption concerns • SVHC listed[2] • SIN listed[1]	PVC	1 g/kg plastic	Antioxidant
4NP	Nonylphenol	84852-15-3	• Very high aquatic toxicity • Endocrine disruption concerns • SVHC listed[2]	PS PVC	0.9 – 1.8 g/kg plastic 2.6 – 4.2 g/kg plastic	Antioxidant

Table 1. Chemicals of concern used as additives in plastics						
Abbreviation	Common name	CAS Registry Number	Reason for inclusion on the list	Used in	Concentration	Function
			• SIN listed[1]			
NP	Nonylphenol	25154-52-3	• Very high aquatic toxicity • Endocrine disruption concerns • SVHC listed[2] • SIN listed[1]	PS PVC	0.9 – 1.8 g/kg plastic 2.6 – 4.2 g/kg plastic	Antioxidant
HBCD	Hexabromocyclododecane	3194-55-6	• Stockholm Convention chemical • SIN listed[1]	Nylon PS ABS/SAN/ASA PP	- 5 – 30 g/kg plastic - -	Flame retardant
decaBDE	Decabromodiphenyl ether	1163-19-5	• Stockholm Convention chemical • SVHC listed[2] • SIN listed[1]	ABS/SAN/ASA Nylon	85 – 140 g/kg plastic 85 – 140 g/kg plastic	Flame retardant
Dechlorane Plus	Dechlorane Plus	13560-89-9	• Candidate for listing on Stockholm Convention	ABS/SAN/ASA PU Nylon PP	30 – 350 g/kg plastic 30 – 350 g/kg plastic	Flame retardant

Table 1. Chemicals of concern used as additives in plastics						
Abbreviation	Common name	CAS Registry Number	Reason for inclusion on the list	Used in	Concentration	Function
			• SVHC listed[2] • SIN listed[1]		30 – 350 g/kg plastic 30 – 350 g/kg plastic	
SCCP	Short-chain chlorinated paraffins	85535-84-8	• Stockholm Convention chemical • SVHC listed • SIN listed[1]	PVC	330 g/kg plastic	Plasticiser/flame retardant
MCCP	Medium-chain chlorinated paraffins	85535-85-9	• Candidate for listing on Stockholm Convention • SVHC listed[2]	PVC	150 g/kg plastic	Flame retardant
UV 328		25973-55-1	• Candidate for listing on Stockholm Convention • SVHC listed[2] • SIN listed[1]	PVC PU ABS/SAN/ASA	1 – 10 g/kg plastic - -	UV stabiliser

Table 1. Chemicals of concern used as additives in plastics						
Abbreviation	Common name	CAS Registry Number	Reason for inclusion on the list	Used in	Concentration	Function
TTS	Tetralead trioxide sulphate	12202-17-4	• SVHC listed[2] • SIN listed[1]	PVC	10 – 40 g/kg plastic	Heat stabiliser
-	Lead distearate	1072-35-1	• Lead bioaccumulation and toxicity concerns	PVC	10 – 40 g/kg plastic	Heat stabiliser

This information was drawn from publicly available, peer reviewed sources. For more information, contact us.

Key for Table 1:

PVC: polyvinyl chloride; PS: polystyrene; ABS: acrylonitrile butadiene styrene; SAN: styrene acrylonitrile; ASA: acrylonitrile styrene acrylate; PU: polyurethane; PP: polypropylene; PE-LD: Low Density Polyethylene; PE-HD: High Density Polyethylene; PET: Polyethylene Terephthalate. [1] Substitute It Now (SIN) list. [2] Substances of Very High Concern (SVHC) list.

Chemicals of concern aren't used in all plastics

Many of the chemicals used in plastics are low concern. Only some plastics contain high concern chemical additives.

How to determine if a plastic product contains chemicals of concern

The best way to find out whether a plastic product contains high concern chemicals is by requesting this information from the product manufacturer or retailer. Reading the ingredients list on a product label won't normally tell you what's in the plastic. For example, reading the ingredients list on a shampoo bottle tells you about the ingredients in the shampoo, not about the ingredients in the plastic bottle. To find out this information, you could contact the shampoo manufacturer.

Disposing of a product that contains chemicals of concern

To find out how to dispose of a plastic product that contains a chemical in Table 1, contact your state or territory government.

Australian Capital Territory	ACT Government - City Services
New South Wales	NSW EPA

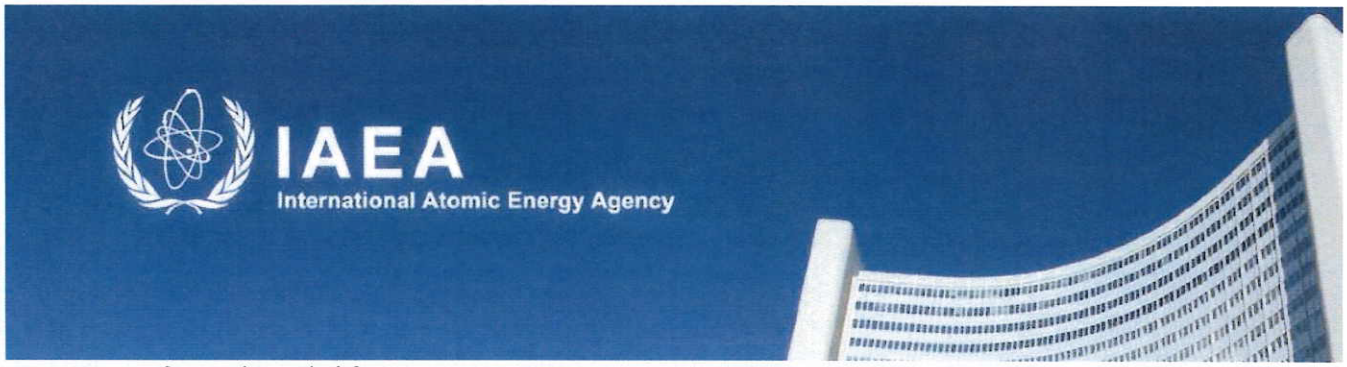
Northern Territory	NT EPA
Queensland	Department of Environment and Science
South Australia	EPA SA
Tasmania	EPA Tasmania
Victoria	EPA Victoria
Western Australia	WA Waste Authority

Government action on chemicals of concern

The Australian Government has recently established the Industrial Chemicals Environmental Management Standard (IChEMS) to help industry and governments manage the environmental risks of chemicals. Through IChEMS we can manage chemicals of concern, including those listed in Table 1.

IAEA
International Atomic Energy Agency

(/)



(/newscenter/focus/chernobyl/faqs)

Frequently Asked Chernobyl Questions

1. What caused the Chernobyl accident?

On April 26, 1986, the Number Four RBMK reactor at the nuclear power plant at Chernobyl, Ukraine, went out of control during a test at low-power, leading to an explosion and fire that demolished the reactor building and released large amounts of radiation into the atmosphere. Safety measures were ignored, the uranium fuel in the reactor overheated and melted through the protective barriers. RBMK reactors do not have what is known as a containment structure, a concrete and steel dome over the reactor itself designed to keep radiation inside the plant in the event of such an accident. Consequently, radioactive elements including plutonium, iodine, strontium and caesium were scattered over a wide area. In addition, the graphite blocks used as a moderating material in the RBMK caught fire at high temperature as air entered the reactor core, which contributed to emission of radioactive materials into the environment.

2. How many people died as an immediate result of the accident?

The initial explosion resulted in the death of two workers. Twenty-eight of the firemen and emergency clean-up workers died in the first three months after the explosion from Acute Radiation Sickness and one of cardiac arrest.

3. How many people were evacuated?

The entire town of Pripyat (population 49 360), which lay only three kilometres from the plant was completely evacuated 36 hours after the accident. During the subsequent weeks and months an additional 67 000 people were evacuated from their homes in contaminated areas and relocated on government order. In total some 200 000 people are believed to have been relocated as a result of the accident.

4. What are the major health effects for exposed populations?

There have been at least 1800 documented cases of thyroid cancer children who were between 0 and 14 years of age when the accident occurred., which is far higher than normal. The thyroid gland of young children is particularly susceptible to the uptake of radioactive iodine, which can trigger cancers, treatable both by surgery and medication. Health studies of the registered cleanup workers called in (so-called "liquidators") have failed to show any direct correlation between their radiation exposure and an increase in other forms of cancer or disease. The psychological affects of Chernobyl were and remain widespread and profound, and have resulted for instance in suicides, drinking problems and apathy.

5. What radioactive elements were emitted into the environment?

There were over 100 radioactive elements released into the atmosphere when Chernobyl's fourth reactor exploded. Most of these were short lived and decayed (reduced in radioactivity) very quickly. Iodine, strontium and caesium were the most dangerous of the elements released, and have half-lives of 8 days, 29 years, and 30 years respectively. The isotopes Strontium-90 and Caesium-137 are therefore still present in the area to this day. While iodine is linked to thyroid cancer, Strontium can lead to leukaemia. Caesium is the element that travelled the farthest and lasts the longest. This element affects the entire body and especially can harm the liver and spleen.

6. How large an area was affected by the radioactive fallout?

Some 150,000 square kilometres in Belarus, Russia and Ukraine are contaminated and stretch northward of the plant site as far as 500 kilometres. An area spanning 30 kilometres around the plant is considered the "exclusion zone" and is essentially uninhabited. Radioactive fallout scattered over much of the northern hemisphere via wind and storm patterns, but the amounts dispersed were in many instances insignificant.

7. How was this area cleaned up after the accident?

Emergency workers (liquidators) were drafted into the area and helped to clean up the plant premises and the surrounding area. These workers were mostly plant employees, Ukrainian fire-fighters plus many soldiers and miners from Russia, Belarus, Ukraine and other parts of the former Soviet Union. The exact number of liquidators is unknown because there are no completely accurate records of the people involved in the clean-up. The Russian registries list approximately 400,000 liquidators as of 1991 and approximately 600,000 people were granted the status of "liquidator". These 600,000 individuals received special benefits because of their involvement, on- and off-site, in tackling the accident's aftermath.

The duties of the liquidators varied. They worked on decontamination and major construction projects, including the establishment of settlements and towns for plant workers and evacuees. They also built waste repositories, dams, water filtration systems and the "sarcophagus", which entombs the entire fourth reactor to contain the remaining radioactive material.

8. Was the rest of Europe/the world affected?

Scandinavian countries and other parts of the world were affected by the radioactive releases from Chernobyl. Caesium and other radioactive isotopes were blown by wind northward into Sweden and Finland and over other parts of the northern hemisphere to some extent. During the first three weeks after the accident, the level of radiation in the atmosphere in several places around the globe was above normal; but these levels quickly receded. No studies have been able to point to a direct link between Chernobyl and increased cancer risks or other health problems outside the immediately affected republics of Ukraine, Belarus and the Russian Federation.

9. What happened to the environment and animals after the accident?

Mutations did occur in plants and animals after the plant explosion. Leaves changed shape and some animals were born with physical deformities. Despite the increased radiation levels, rare species are now returning in large numbers to the area. These animals include beavers, moose, wolves and wild boar, plus species of birds.

10. Is it safe to visit the area now?

One may certainly visit the Chernobyl area, including even the exclusion zone, which is a 30 kilometre radius surrounding the plant, all of whose reactors are now closed. Although some of the radioactive isotopes released into the atmosphere still linger (such as Strontium-90 and Caesium-137), they are at tolerable exposure levels for limited periods of time. Some residents of the exclusion zone have returned to their homes at their own free will, and they live in areas with higher than normal environmental radiation levels. However, these levels are not fatal. Exposure to low but unusual levels of radiation over a period of time is less dangerous than exposure to a huge amount at once, and studies have been unable to link any direct increase in cancer risks to chronic low-level exposure.

11. What was done to ensure the safety of other RBMK reactors, so that this scenario will not present itself again?

Lessons learned from the accident were a significant driving force behind a decade of IAEA assistance to the countries of Central and Eastern Europe and the former Soviet Union. Much of this work focused on identifying the weaknesses in and improving the design safety of VVR and RBMK reactors. Upgrading was performed on all RBMK units to eliminate the design deficiencies which contributed to the Chernobyl accident, to improve shutdown mechanisms and heighten general safety awareness among staff. Just as important as the design safety work has been the focus on operational safety and on systems of regulatory oversight.

12. How do the inhabitants live now?

There are 187 small communities in the exclusion zone that remain virtually abandoned to this day. A few inhabitants chose to return to their homes in the exclusion zone, but children are not allowed to live in this area. The evacuated population lives mainly in newly constructed towns such as Slavutich in areas

How Far Did Chernobyl Radiation Reach?

How far-reaching was the Chernobyl catastrophe, and how far did the radiation travel across Europe?

- **One of four nuclear reactors in the Chernobyl power plant exploded in 1986, causing problems caused by the fallout of radioactive materials across Europe.**
- **The Soviets had to admit what happened in the Chernobyl power plant after the Swedish scientists detected high levels of radiation in their own country, only two days after the incident.**
- **Radioactive isotopes like americium-241 will slowly, but surely, keep contaminating the area that was affected by the explosion, as it has a half-life that lasts for more than a thousand years.**

On April 26, 1986, the most horrific nuclear disaster in history happened in the Chernobyl power plant in Ukraine. After a series of technical failures and poor human judgment in handling an unstable nuclear core, the RBMK reactor 4 exploded, facing the former USSR and the whole world with a problem that was new for everyone.

How far-reaching was the Chernobyl catastrophe, and how far did the radiation travel across Europe?

After The Explosion

One thing worth noting at the beginning is that even today, after almost 34 years have gone by, the negative effects of this accident are still changing the environment and the genetic structure of life forms, hundreds of miles around the city of Pripyat, where the Chernobyl power plant stood. When the reactor exploded, it was an immediate threat that made the USSR officials decide on evacuating the whole city of Pripyat (around 50,000 people). But, the spread of radioactive materials could not have been stopped.

The problem lies in the fact that there are radioisotopes in the nuclear core. Usually, they have rather high boiling points, which kept most of the radioactivity inside the reactor after it blew up. However, iodine-131 and caesium-137 have much lower boiling points, which enabled them to evaporate up in the air. After those particles were airborne, there was nothing that could stop them from spreading all over Europe.

Radioactive Winds

On April 28, just two days after the RBMK reactor 4 exploded, the winds carried the radioactive particles all the way to Sweden. Sweden is far from Ukraine, all the way up in the north of Europe, 683 miles (1100 km) away. Although the Soviet officials tried hard to cover up this accident, and it seemed that even them do not want to admit what happened, they had to come clean and soon reveal what was going on in Pripyat.

SOURCE: https://www.worldatlas.com/articles/how-far-did-chernobyl-radiation-reach.html

(2) A planning authority is to have regard to the following when preparing a community participation plan—

(a) The community has a right to be informed about planning matters that affect it.

(b) Planning authorities should encourage effective and on-going partnerships with the community to provide meaningful opportunities for community participation in planning.

(c) Planning information should be in plain language, easily accessible and in a form that facilitates community participation in planning.

(d) The community should be given opportunities to participate in strategic planning as early as possible to enable community views to be genuinely considered.

(e) Community participation should be inclusive and planning authorities should actively seek views that are representative of the community.

(f) Members of the community who are affected by proposed major development should be consulted by the proponent before an application for planning approval is made.

(g) Planning decisions should be made in an open and transparent way and the community should be provided with reasons for those decisions (including how community views have been taken into account).

(h) Community participation methods (and the reasons given for planning decisions) should be appropriate having regard to the significance and likely impact of the proposed development.

(3) For the purposes of this Division—

(a) a community participation plan prepared by the Planning Secretary applies to the exercise of relevant planning functions by the Minister, and

(b) a general community participation plan prepared by the Planning Secretary applies to the exercise of relevant planning functions by determining authorities under Division 5.1 (other than councils or prescribed public authorities), and

(c) the regulations may provide that the community participation plan of a planning authority applies to the exercise of relevant planning functions by another planning authority and that the other planning authority is not required to prepare its own community participation plan.

(4) A council need not prepare a separate community participation plan if it includes all the matters required under this section in its plan and strategies under the *Local Government Act 1993*, section 402A.

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Moss Vale Plastics Recycling and Reprocessing Facility

Amendment Report Response to Submissions Report

Plasrefine Recycling Pty Ltd

February 2024

→ The Power of Commitment

This report: has been prepared by GHD for Plasrefine Recycling and may only be used and relied on by Plasrefine Recycling for the purpose agreed between GHD and Plasrefine Recycling as set out in section 1.5 of this report.

GHD otherwise disclaims responsibility to any person other than Plasrefine Recycling arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report.

GHD disclaims liability arising from any of the assumptions being incorrect. GHD has prepared this report on the basis of information provided by Plasrefine Recycling and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Project name		Moss Vale Plastics and Reprocessing Facility					
Document title		Moss Vale Plastics Recycling and Reprocessing Facility | Amendment Report Response to Submissions Report					
Project number		12524108					
File name		12524108-REP_Amendment Report Response to Submissions Report					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S4	0	L Xuereb L Yum	D Gamble S Mason-Jones	On file	D Gamble	On file	1/2/2024

GHD Pty Ltd | ABN 39 008 488 373
[redacted]
Sydney, New South Wales 2000, Australia
[redacted]

Issue	Key potential impacts and benefits
Aboriginal cultural heritage	Harm to three isolated finds (MVRec IF1, BR IF1, and BR IF2) assessed as having high cultural values but low scientific values and four sites (Douglas Rd OS-1, Beaconsfield Rd OS-2, Beaconsfield Rd IF-2, and Beaconsfield Rd IF-3) assessed as no longer having cultural heritage value.
Landscape and visual	Temporary landscape character changes and visual impacts due to visibility of construction compound and activities and increase in construction traffic.
Biodiversity	Removal of 0.28 ha of farm dams and associated vegetation that have been assigned to PCT 1256 - Tableland swamp meadow on impeded drainage sites of the western Sydney Basin Bioregion and South Eastern Highlands Bioregion including potential habitat for the Southern Myotis. Removal of 0.04 ha of planted trees that have been assigned to PCT 944 Mountain Grey Gum - Narrow-leaved Peppermint grassy woodland on shales of the Southern Highlands, southern Sydney Basin Bioregion including removal of nine planted specimens of Eucalyptus macarthurii, listed as endangered under the BC Act and EPBC Act. Minimal potential indirect impacts to adjoining vegetation associated with edge effects, light spill, noise and introduction of weeds and pathogens.
Social (construction and operation)	Positive social impacts may be experienced for some members of the community as a result of improved livelihoods and way of life, with the proposal providing increased local employment opportunities, and positive cumulative impacts as part of the broader strategic transformation of the Southern Highlands Innovation Park (SHIP). Positive social impacts to livelihoods as a result of the proposal include the potential to attract people to work and live in the local government area, make use of key enabling infrastructure upgrades, deliver on programs and education opportunities for the community, and strengthen the capabilities of the Wingecarribee Shire through generating additional revenue. For NSW, the proposal provides a potential site for a large scale plastics recycling facility that will significantly address the current plastics recycling capacity shortfall. The proposal, with the proposed educational and research centre, would also provide potential benefits to Moss Vale and the Southern Highlands more broadly in terms of educational opportunities for local residents as well as tourists and students from other areas travelling to the locality. Negative social impacts have the potential to be experienced by key identified community groups as a result of a change of character affecting sense of place and surroundings, potential impacts to psychological health and presence of additional heavy vehicles causing amenity and safety concerns. Negative social impacts have the potential to be experienced by groups such as: residents nearby to the proposal site, including those with a view of the site, nearby elderly residents and residents who operate tourism-based businesses within proximity to the proposal site. It is acknowledged that the majority of the negative impacts of the proposal may also relate to the recent broader industrial development within the SHIP, meaning that the impacts identified as part of the proposal, are cumulative that may not have commenced with the proposal.
Operation	
Waste	Generation of some waste during operation from both the recycling and reprocessing activities as well as from staff/offices, which would require appropriate storage, segregation, handling and reuse, recycling or disposal.
Soils and water	Riparian vegetation restoration of both the eastern and western watercourse. Demand for potable water and wastewater (sewage) capacity.
Traffic and transport	Increases in heavy vehicle and light vehicle traffic movements on the local road network in the order of 50 heavy vehicles a day and 140 light vehicles a day.
Noise	Noise from plant and equipment and recycling/reprocessing activities within the buildings that would require appropriate acoustic considerations in the building design. All predicted noise levels at the sensitive receivers are at or below the noise trigger levels.
Air quality	Low levels of particulates and volatile organic compound emissions from granulation and injection and extrusion moulding. Low level of particulates emissions from milling or profiling activities in Building 2.
Hazards and fire risks	Risks from operational hazards such as vehicle interaction, natural hazards, fire, entanglement, falls from heights, flying/falling objects, manual handling, slips, trips, falls, collisions, contact with chemicals. Fire risks from potentially combustible internal waste stockpiles.

Department of Planning, Housing and Infrastructure

dphi.nsw.gov.au

NSW GOVERNMENT

Moss Vale Plastics Recycling Facility

State Significant Development Assessment Report (SSD-9409987)

October 2024

Fire and Rescue NSW (FRNSW) advised that any toxic smoke from a prolonged fire at the development would rise directly upwards, reducing the risk of impacts on the ABR. To ensure any potential impacts are minimised and the ABR can take appropriate and timely action to protect the mice, the Department has recommended preparation of an Emergency Response Plan to include specific procedures to notify ABR staff of any fire incident at the site.

The ABR indicated that vibration during mice embryo injection can cause the procedure to fail and may negatively impact the mouse breeding program. A Construction Vibration Study was prepared which found that vibration impacts can be adequately managed through a range of measures, including limiting the size of vibratory rollers, scheduling the use of rollers and the preparation of a detailed Construction Noise and Vibration Management Plan in consultation with ABR.

On review of the information provided around fire and vibration impacts, and after consultation with FRNSW, the Department is satisfied vibration and fire risks on the ABR can be appropriately managed, subject to the recommended conditions.

Operational Traffic

During operation, waste plastic and plastic products would be accepted and dispatched by 19 m semi-trailer between 7 am to 6 pm Monday to Friday. The operational heavy vehicle route would be via the Hume Highway, Medway Road, Taylor Avenue, Berrima Road, Douglas Road, Collins Road, the new 'north-south' access road and Braddon Road.

The development would generate a total of 100 heavy vehicle movements (50 in and 50 out) and 280 light vehicle staff movements (140 in, 140 out) per day. The Applicant's traffic assessment conservatively modelled 10 heavy vehicles (5 in 5 out) and 120 light vehicles (60 in 60 out) per hour at the new intersection of the 'north-south' access road and Collins Road and one train per hour on the Berrima Branch line. During both the AM and PM peaks, the TIA identified the intersection would operate at a Level of Service A (i.e. good operation), both now and into the future.

To ensure operational traffic is in accordance with the Applicant's predictions and managed appropriately, the Department has recommended preparation of an Operational Traffic Management Plan in consultation with Council which would specifically include details of heavy vehicle routes, a Driver Code of Conduct, a Traffic Control Plan, and a Heavy Vehicle Monitoring Plan.

The Applicant provided preliminary design drawings of the level crossing, along with signage details, a sight distance assessment, swept path analysis and a preliminary Road Safety Audit to demonstrate the viability of the revised level crossing arrangement. TfNSW advised that, in accordance with the Rail Safety National Law (NSW), the Rail Infrastructure Manager (Boral) and the Road Manager (Council) are responsible for managing risks at a level crossing. The Department has recommended a condition requiring the final design and construction of the rail crossing to be to the satisfaction of Council and Boral. To ensure the level crossing would operate safely into the future, the Department also recommends the Applicant undertake a Road Safey Audit and prepare an Australian Level Crossing Assessment Model prior to constructing the level crossing and associated works.

The Department's assessment concludes the operational traffic impacts of the development are acceptable and can be managed via implementation of the recommended conditions of consent.

Conclusion

The Department's assessment concludes the impacts of the development can be mitigated and/or managed to ensure an acceptable level of environmental performance, subject to the recommended conditions of consent. The Department's assessment concludes the development would:

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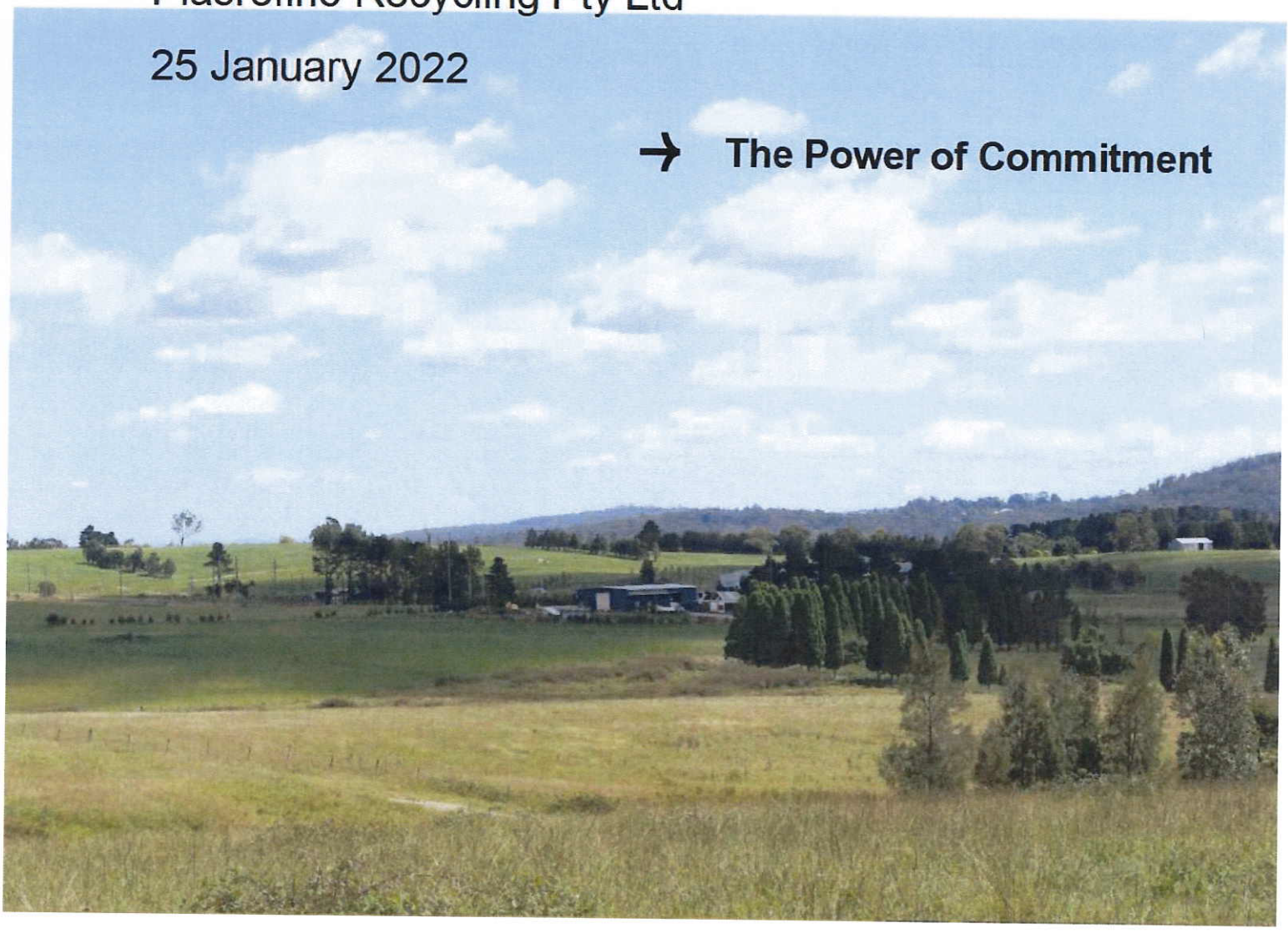
Moss Vale Plastics Recycling and Reprocessing Facility

Technical Report 3 – Air Quality and Odour

Plasrefine Recycling Pty Ltd

25 January 2022

→ The Power of Commitment



4.2 Climate and meteorology

4.2.1 Overview

The local meteorology (weather) within the study area is of critical importance when assessing the potential for air quality impacts at sensitive receptors.

The emission potential (emission rates) from dust generating activities is dependent on both wind speeds at the activity location and the surface moisture content. Worst-case construction dust emissions would occur during periods of high winds speeds and low surface moisture content, where a combination of low rainfall, elevated temperatures and elevated solar radiation would lead to a drying of the surface.

Dispersion of pollutants within an environment is primarily dependent on wind direction, wind speed and the measure of atmospheric stability. The poorest (worst-case) air dispersion conditions for near-surface air emissions are generally characterised by low wind speeds, stable atmospheres and wind directions placing receptors directly downwind of an emission source.

The meteorological environment relevant to the plastics recycling and reprocessing facility site is best understood through review of data collected from long-running monitoring weather stations, most commonly operated by the Bureau of Meteorology (BOM) as well as state authorities (DPIE in this case) and in some instances private entities.

4.2.2 Wind environment

The Bureau of Meteorology (BOM) operates Moss Vale AWS (station number: 068239) which is located approximately 5 km east of the proposal. There are no intervening terrain features or significant variance in land use between the AWS and the proposal location. Given the proximity and similarity between the AWS and the proposal location, meteorological data recorded at the AWS is considered to effectively represent the meteorological environment at the proposal location.

Figure 4.2 displays the 5-year (2016-2020) wind rose for the Bureau of Meteorology's Moss Vale AWS. Figure 4.3 shows the seasonal wind roses for the same AWS for the same period. The wind roses show:

- The frequency of winds blowing from a direction as the length of the 'petal' for that direction.
- The frequency and distribution of various wind speeds from a direction as the colour of the 'petal' for that direction.

The wind rose plots shows the following relating to the wind environment at the plastics recycling and reprocessing facility site:

- An average wind speed of 4.9 m/s is expected during the year, with wind speeds consistent throughout the year.
- Calm wind conditions, classified as wind speeds less than 0.5 m/s were measured at occurring 3.5% of the time, and are most frequent during autumn and winter.
- The general pattern of wind sees the highest frequency of winds from the west, north-northeast and south-southeast (in order of prevalence). Generally, receptors downwind of the proposal in these directions are most likely to be impacted by fugitive emissions from the proposal.
- High wind speeds (>7 m/s), which are likely to cause elevated dust emissions during construction, are most prevalent from the west. High wind speeds occur most frequently during the spring months, suggesting that control of construction dust emissions will be most challenging during these months (subject to rainfall during the construction period).
- The pattern of low wind speeds (<3 m/s), a key driver of poor air dispersion, is consistent with the broader pattern of winds.

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Moss Vale Plastics Recycling and Reprocessing Facility EIS

Volume 1

Plasrefine Recycling Pty Ltd

January 2022

→ The Power of Commitment

The nearest receptors are the commercial receptor (Australian BioResources) and industrial receptor (Dux Manufacturing Moss Vale). There are 20 residential receptors within 500 metres of the of the plastics recycling and reprocessing facility site.

13.2.2 Climate and meteorology

The Bureau of Meteorology operates the Moss Vale Automatic Weather Station (AWS) (station number: 068239) which is located approximately 5 kilometres east of the plastics recycling and reprocessing facility site. There are no intervening terrain features or significant variance in land use between the AWS and the proposal site. Given the proximity and similarity between the AWS and the proposal site, meteorological data recorded at the AWS is considered to effectively represent the meteorological environment at the proposal site.

Figure 13.1 shows the 5-year (2016-2020) wind rose for the Moss Vale AWS and Figure 13.2 shows the seasonal wind roses for the same AWS for the same period. The wind roses show:

- the frequency of winds blowing from a direction as the length of the 'petal' for that direction
- the frequency and distribution of various wind speeds from a direction as the colour of the 'petal' for that direction.

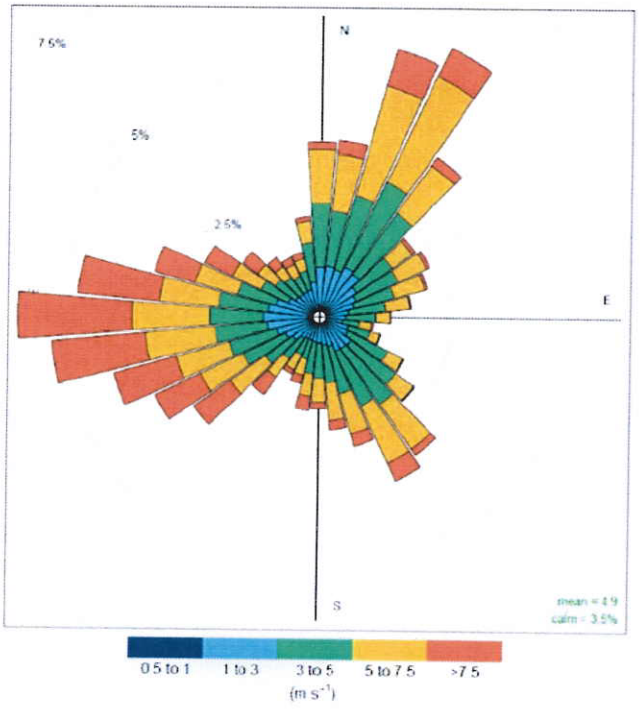


Figure 13.1 *5-year wind rose at Moss Vale AWS*

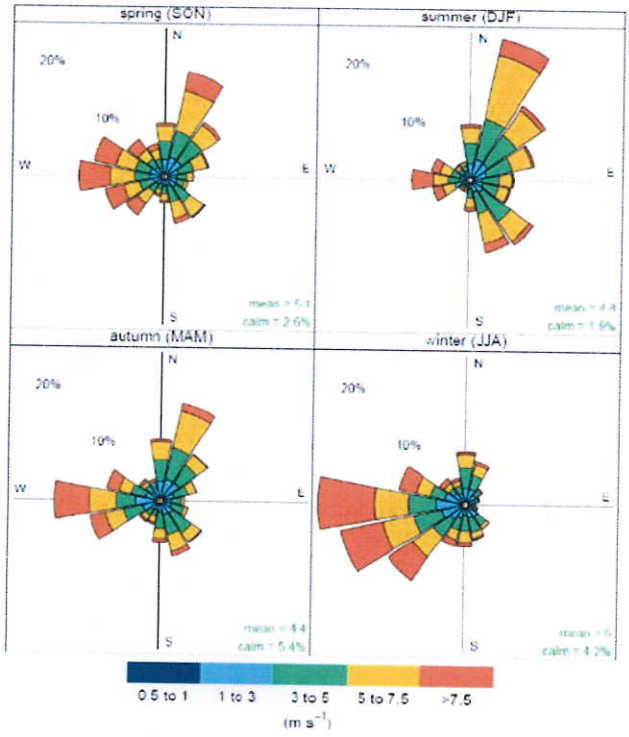


Figure 13.2 *5-year seasonal wind rose at Moss Vale AWS*

The 10-year climate data from the Moss Vale AWS indicates a temperate climate with the average annual temperature of 13.3° C. The annual average maximum and minimum temperatures are 19.5° C and 8° C respectively. The average annual rainfall at Moss Vale is 736 millimetres with the wettest month being February with an average rainfall of 121 millimetres for the month and the driest month being April with an average of 18.2 millimetres for the month.

13.4.2 Wastewater treatment plant

The proposed wastewater treatment plant would be used to recycle water used in the cleaning processes in Building 1. It would not be used to treat sewage from the on-site amenities or offices (sewage would be discharged direct to sewer). The majority of the treatment processes at the proposed plant are not likely to generate significant amounts of odour. However, some odour may be generated from the handling and storage of the sludge generated during the treatment process. The wastewater treatment plant would be fully enclosed, with air flow achieved through natural ventilation of the building.

The nearest residential receptor is greater than 450 metres from the proposed wastewater treatment plant, which is well in excess of the separation distance which would be required for a treatment plant of the proposed scale and nature.

Based on the above characterisation of the activity and the source to receptor pathway, the potential impact is expected to be low to negligible at all sensitive receptors. Therefore, the risk of air quality impacts due to the operation of the wastewater treatment plant is considered low.

13.4.3 Cumulative impacts

Particulate matter

The greatest risk of cumulative impacts (background plus proposal) is associated with $PM_{2.5}$ emissions. This is because $PM_{2.5}$ emissions were assumed to be equivalent to PM_{10} emissions, and the criteria for $PM_{2.5}$ is significantly less than for PM_{10}. The dispersion modelling shows that the incremental (proposal only) impact is well within the criteria levels, however assessment of the cumulative impact is required.

Background 24-hour average $PM_{2.5}$ concentrations are measured at the Bargo DPIE station, as presented in section 13.2.3. The data from Bargo shows that, as for many locations in NSW, short-term ambient $PM_{2.5}$ concentrations are sometimes in exceedance of the air quality objectives. At locations such as Bargo, these exceedance periods are most commonly and likely associated with regional sources such as bushfires and controlled burns.

The maximum cumulative impact can be determined through a contemporaneous assessment where the predicted daily proposal impact and the daily background concentration are added to give the maximum total impact for each 24-hour period. A contemporaneous assessment has been completed using background $PM_{2.5}$ concentrations from Bargo DPIE stations for the years 2017 and 2018. The years 2019 and 2020 have not been included in the assessment as they are heavily affected by bushfire activity.

Figure 13.4 and Figure 13.7 show a time series of the incremental (proposal only) and background data stacked to show the total cumulative impact for the most affected commercial (R001) and residential (R160) receptors respectively. The total cumulative impact has been ranked (high to low) and is shown on Figure 13.5Figure 13. and Figure 13.8 for each of these receptors respectively.

The following observations can be made from these figures:

- Over the two-year period there are a total of five cumulative exceedances of the 24-hour average $PM_{2.5}$ objective at the most affected commercial receptor (R001). This represents approximately 2.5 exceedances per year.
- There are a total of two cumulative exceedances of the 24-hour average $PM_{2.5}$ objective at the most affected residential receptor (R160). This represents 1 exceedance per year.
- Exceedances occur on days where there are significantly elevated background concentrations ($PM_{2.5}$), and the incremental impact from the proposal on the exceedance days is very low. This is further demonstrated through the values presented in Table 13.11 below.

Table 13.11 shows the contribution of the cumulative $PM_{2.5}$ concentration that comes from background and the proposal for each of the exceedance days. The proposal contributed, on average, 18 percent and nine percent of the total cumulative concentration at the most affected commercial (R001) and residential receptors (R160) respectively.

Volatile organic compounds

The industrial operations identified as likely to emit significant amounts of air pollutants within five kilometres of the plastics recycling and reprocessing facility site are described in section 13.2.3. Two of these facilities were identified as having the potential to lead to air quality (volatile organic compounds and odour) impacts at sensitive receptors closest to the proposal site.

As discussed in sections 13.4.1 and 13.4.2, the risk of volatile organic compound and odour impacts due to operation of the proposal is considered low. Emissions generated from the operation of the proposal are considered minor due to proposed emissions control system. Further, the distance from potential sources of emission to the nearest sensitive receptors is significant, and meteorological conditions that make dispersion of ventilation air from the facility in the direction of the nearest sensitive receptors unlikely.

The risk of cumulative volatile organic compound impacts is considered to be **low**.

Based on the above, the proposal is not likely to influence the air quality at the sensitive receptors and therefore the proposal would not lead to any cumulative impact on air quality.

13.5 Mitigation and management measures

13.5.1 Construction

The measures listed in Table 13.12 would be implemented to ensure air quality impacts during construction would be minimised.

Table 13.12 Air quality mitigation measures – construction

Mitigation measure	Timing
Construction dust management plan A dust management plan would be developed for the proposal which would incorporate the general and specific dust management measures for construction and track-out outlined in Table 5.1, Table 5.2 and Table 5.3 of Technical Report 3 – Air Quality and Odour.	Pre-construction/ construction

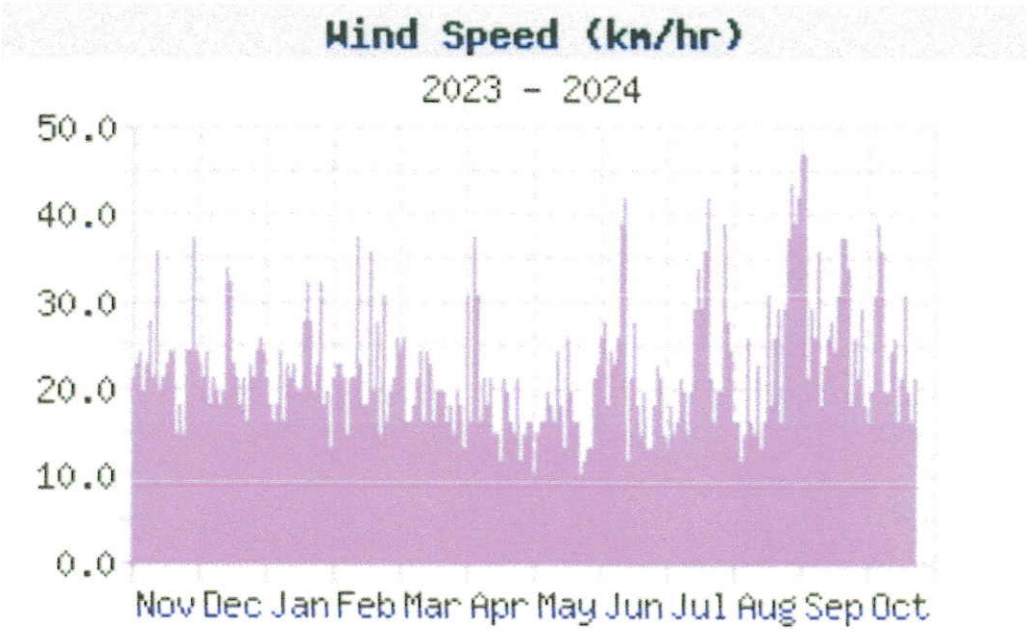
13.5.2 Operation

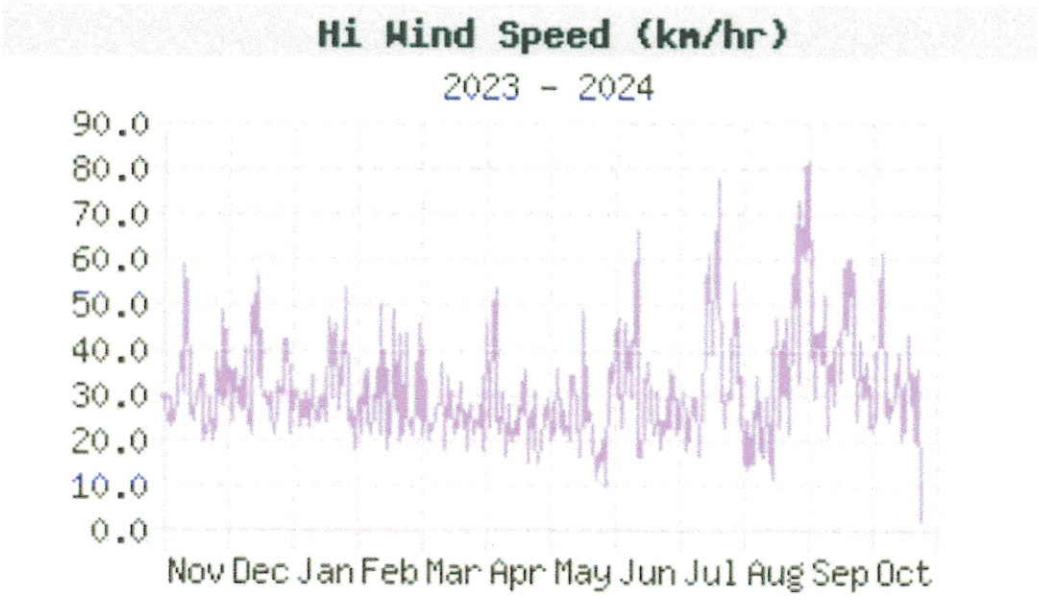
No operational air quality impacts are predicted, however the mitigation measure listed in Table 13.13 would be implemented to ensure low levels of emissions are maintained during operation.

Table 13.13 Air quality mitigation measures – operation

Mitigation measure	Timing
Emission control systems – Emission control systems would be kept operational and regularly maintained – Should any unit become faulty, production on those affected lines would halt immediately and not resume until emission control systems are fully operational	Operation
Odour – An odour complaints management procedure would be developed as part of the broader complaints management procedures to ensure that any complaints regarding odour are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.	Operation
Monitoring – Once operational, sampling of the proposal operational emissions would be conducted to confirm assumptions made throughout the air quality assessment. – An air monitoring program would be established to ensure workplace exposure limits are maintained. Sampling would be undertaken in each building biannually by a suitable professional in accordance with guidance from Safe Work Australia and relevant Australian Standards.	Operation
General – To minimise dust levels within both Building 1 and Building 2, regular sweeping and housekeeping practices would be undertaken	Operation

www.mossvaleweather.net





Moss Vale Weather Station

Moss Vale Automatic Weather Station (AWS) is a Davis Wireless Vantage Pro 2 Plus, 6152 with ethernet data logger Weatherlink IP 6555, software 6.0.3. We are located near Berrima, in the Southern Highlands, NSW, Australia. Elevation: 685m. ISS: 2m above grass, Anemometer: 10m above ground level. Rain readings taken from this location should not be relied upon, as the rain collector pole is attached to a fence with animals nearby, which may cause vibrations and/or shaking, causing the rain gauge to tip.

Data is archived every minute, and uploaded to our web server every 5 minutes. The Apparent Temperature Index, is being calculated using the Bureau of Meteorology's formula for AT index. The "Station Forecast" is generated by the Weather station console and is based on barometric pressure rate changes, and our data readings are not quality controlled, although Davis Vantage Pro units are NIST certified for quality and accuracy. BOM Bowral Forecast is downloaded from the Bureau of Meteorology FTP site every 5 minutes and presented in our own style and colour format, the wording of the forecast has not been changed, and was written by the Bureau of Meteorology.

Solar and Lunar dates and times are only valid for Moss Vale and surrounding local areas.

THE UNIVERSITY OF SYDNEY

New technology turns a liability into an asset

New recycling process turns plastic waste into recyclable products

The scale of plastic waste has shocked the world but research shows the challenge is not insurmountable.

Plastic waste: transforming it into a valuable asset

Plastic waste is a global crisis.

So far, the world has looked at it as an unsightly menace to be removed, but Professor Thomas Maschmeyer [https://sydney.edu.au/science/people/thomas.maschmeyer.php] has gone beyond that idea. His work challenges our perceptions of waste, by turning plastic into an asset that people would actively seek out to recycle because it can make them money.

"Of course, everyone is concerned about plastic waste, but the reality is, they also need to use plastic," says Professor Maschmeyer from the University of Sydney's School of Chemistry [/content/corporate/science/schools/school-of-chemistry.html] . "Our recycling method reconciles those two ideas."

Professor Maschmeyer created a chemical process where plastic waste can be turned into fuel, or used to make new plastic again, and again. It can also handle any kind of plastic, including the contaminated plastic that China recently stopped importing as it moves away from being the world's largest waste recycler.

The chemical process

The recycling process is based on the catalytic hydrothermal reactor (Cat-HTR) platform, developed by Professor Maschmeyer and his colleagues at Licella [http://www.licella.com.au/our-story/] . It was the starting point for what was then a

startup company, Licella, which has been strongly supported by the University of Sydney.

Using water at high pressure and high temperature, Cat-HTR breaks plastics down to their smaller chemical components. The water prevents unwanted chemical reactions, then catalysts are used to make the components rearrange themselves into new forms:

- Solids, like industrial waxes for the food and coatings industry
- Heavy liquids, like oils/greases for lubrication purposes
- Light liquids, like solvents and fuels such as diesel or petrol
- Reactive gases, like ethylene, which can be used to make new plastics.

The process takes about 20 minutes with low energy usage and minimal greenhouse gas emissions.

As it converts plastic waste into usable products, the Cat-HTR process will also change peoples' perceptions. "It monetises plastic waste," says Professor Thomas Maschmeyer. "So it will be treated as a resource to be used rather than a liability to ignore."

The good news is that this transformative advance has already moved well beyond the lab. In fact, the first Cat-HTR plant is currently being built in the north of England with ReNew ELP [http://www.renewelp.com/] and will soon be converting up to 20,000 tonnes of waste plastic annually, with analogous plans taking shape in Australia through iQRenew [http://www.iqrenew.com/] .

By thinking beyond the accepted methods, Professor Maschmeyer and his colleagues are helping to clean up the world, one plastic bottle at a time.

Professor Thomas Maschmeyer

https://www.sydney.edu.au/research/research-impact/a-new-plastic-recycling-technology-converts-liability-into-asset.html

13

This was published 2 years ago

A big blue in a small Southern Highlands town over a giant plastics plant

Deb Richards

January 13, 2022 — 5.00am

A proposal to build Australia's largest plastic recycling plant on the fringes of the Southern Highlands township of Moss Vale has prompted a storm of local protest even as the country struggles to cope with a glut of waste plastic.

If approved the factory would consist of two sheds nearly five storeys high taking up 3 hectares of an industrial site of 7.7 hectares presently used for grazing near a hobby farm owned by Bev and Graham Hordern.

Bev and Graham Hordern at home in Moss Vale. Over their shoulder is the site of what may become the nation's largest plastic recycling facility. JAMES BRICKWOOD

"This will be life-changing," says Mrs Hordern, who fears not just the loss of her lifestyle, but the health and safety impacts of the operation.

The $70 million plant proposed by the Australian registered company Plasrefine Recycling would have the capacity to process over 120,000 tonnes of mixed plastic - around 40 per cent of plastics now sent for recycling in Australia - from residential yellow bins in Sydney, Wollongong, Canberra and Melbourne each year.

Locals, who have gathered 3200 signatures for a petition against the development, say the site is inappropriate for such a huge operation as it sits within Sydney's water catchment, is out of scale with nearby industrial development and lies within the town's boundary.

It would operate 24 hours a day, seven days a week.

strategy after China introduced bans a total of 3.4 million tonnes of plastics were consumed in Australia, of which just 320 000 tonnes of plastics were recycled.
The Plasrefine plant offers a potential solution. It would use robots to sort the plastics into five types. They would be flaked, washed, and shipped to China for reforming into products. A 'stage 2' plant at Moss Vale is proposed for fabricating products, where flakes and pellets would be melted and reformed.

The project has been presented as an environmental boon, a means to "close the loop" on recycling.

Globally, however, plastic is a complex material with multiple types and grades of polymer. Recycling of different grades has proved difficult and expensive.

Further, the process of recycling degrades quality and strength of the material, and the process normally delays rather than prevents the product's eventual disposal.

Chief executive of the National Waste and Recycling Industry Council, Rose Read, says Australia urgently needs to increase its capacity for recycling plastics.

But she says the association knows little about the Plasrefine proposal.

"No one has approached us about this project, but we want to see facilities developed to best practice and work with communities to build trust and a strong social licence," she says.

The head of the NSW Waste Contractors and Recyclers Association, Tony Khoury, has not heard any industry talk about this project which he said is, "astonishing for such a large venture".

Questions for council

The contentious proposal has been further complicated by what appears to be poor planning by the Wingecarribee Shire Council.

A crucial access road appears on a map, but is drawn without any easement. The site sees land zoned for environmental living sit side-by-side with industrial land on a single lot.

In 2019, an application to subdivide the land into two separate lots reflecting the different zonings was refused on a raft of grounds, including that it was not connected to the local sewer, or stormwater and two streams forming part of the Sydney Water Catchment crossed it. The plan also conflicted with state water protections.

It was found by the council that the construction of the access road would generate a "significant adverse impact on the residential amenity and safety of Moss Vale residents living to the south of the site".

In December, the council, which is under administration, called for a Social Impact Assessment to be conducted and rejected claims it had previously indicated support for the project. The assessment has not been undertaken, and is not mandatory.

Either way the proposal is out of council's hands, as a State Significant Development it will be assessed for approval by the NSW government's Environment Protection Authority.

But locals remain unmoved.

A crowd of 200 residents attended a public engagement session at the end of November and raised a slew of objections.

"No one at that forum thinks this is brilliant," resident Sam Jones says.

Mr Jones is a high school teacher and a member of the independent Let's Get It Right local political team.

Locals in Moss Vale do not want a plastic recycling plant in their region. JAMES BRICKWOOD

"We are angry about the way we've been treated. Hundreds of people left that meeting feeling this company is up to no good," he says.

GHD is ready to submit the Environmental Impact Statement for Plasrefine and says the project is compliant and it is "committed to being a good neighbour".

"It will go on exhibition soon," says GHD's senior technical director, David Gamble. "It will address issues that are relevant and important to the community."

But residents remain sceptical.

"We are more than angry," Mr Hordern says.

"We couldn't stay here if this goes ahead. But it's bigger than just us. For what they want to do and where they've chosen to do it there will be irreparable damage. It's very distressing."

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Plasrefine Recycling Pty Ltd

Moss Vale Plastics Recycling Facility
EIS Scoping Report

September 2020

1. Introduction

1.1 Overview

Plasrefine Recycling Pty Ltd (Plasrefine Recycling) proposes to construct and operate a waste plastics sorting and plastics recycling facility (the facility) at 74-76 Beaconsfield Road, Moss Vale (the proposal site). The facility would extract mixed plastics from waste, sort the plastics into different types, and convert the various plastics to plastic flakes and pellets (in Stage 1 of the proposal) and potentially produce more advanced plastic products such as polyester fibre and resins (in Stage 2 of the proposal).

The combined outputs of Stages 1 and 2 of the proposal would help fill the gap in local processing capacity for mixed plastics, which have historically been exported to China and other countries or have been landfilled with other wastes. The plant would be available to receive mixed plastics from various waste and recycling collection companies and from material recovery facilities (MRF) and recycling plant operators. The range of plastics processed and the overall quantities of each type of plastics recovered would depend upon demand and market requirements.

The facility would have an ultimate capacity to receive up to 150,000 tpa of waste plastics and wastes containing plastics, from which approximately 120,000 tpa of mixed plastics would be extracted and processed.

1.2 The proponent

Plasrefine Recycling Pty Ltd is a company that was recently registered in Australia for the purpose of building and operating the proposed facility at Moss Vale.

The proposed operator of the facility, Mr Lyu, who is the Principal Technical Director of Plasrefine Recycling, has over 20 years' experience in waste treatment, management and logistics internationally. In the last 15 years, he has established and run a water purification company specialising in treating electroplating wastewater in an environmentally friendly manner.

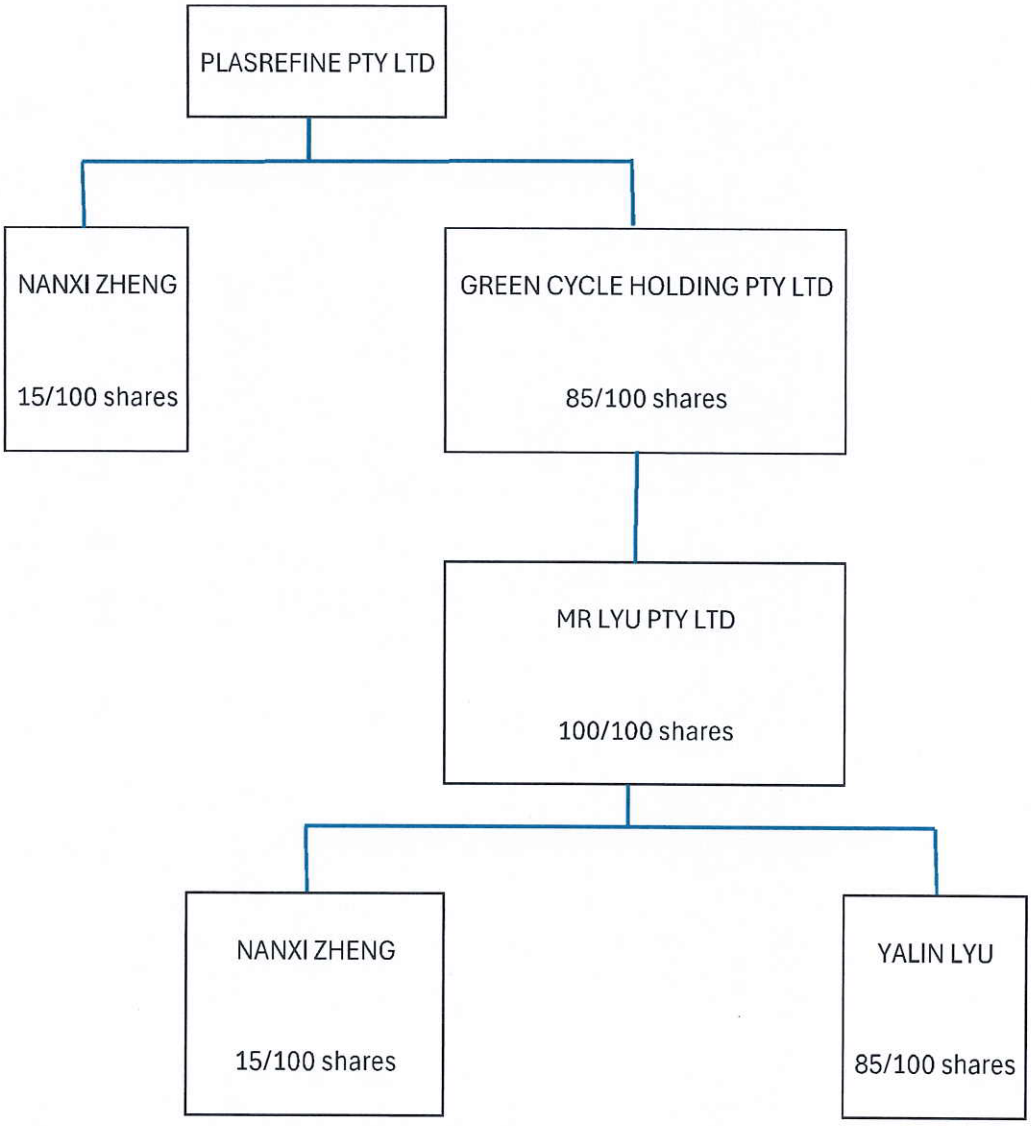
is not a director of the company

This company is now the largest company in Beijing that deals with polychlorinated biphenyl wastewater. Mr Lyu is closely associated with companies that specialise in plastics recycling and would provide the technology and experience needed to successfully operate the plant.

Plasrefine Recycling would recruit experienced staff who have been involved for many years in the recycling and waste management industries, as well as utilise overseas based expertise in plastics recycling.

1.3 Purpose of this report

This report has been prepared to support a request to the NSW Department of Planning, Industry and Environment (DPIE) to receive the Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement (EIS) under Part 4 of the *Environmental Planning and Assessment Act 1979 (EP&A Act)*.



Ultimate Control:

Nanxi Zheng	27.75%
Yalin Lyu	72.25%
	100.00%

15

ASIC
Australian Securities & Investments Commission

Current & Historical Company Extract

Name: PLASREFINE RECYCLING PTY LTD
ACN: 642 246 704

Date/Time: 22 October 2024 AEST 08:07:13 AM

This extract contains information derived from the Australian Securities and Investments Commission's (ASIC) database under section 1274A of the Corporations Act 2001.

Please advise ASIC of any error or omission which you may identify.

Secretary

Name: [redacted] 2ESM39212
Address:
Born:
Appointment date: 01/07/2020

Share Information

Share Structure

Class	Description	Number issued	Total amount paid	Total amount unpaid	Document number
ORD	ORD	100	100.00	0.00	1EMG96256

Members

Note: For each class of shares issued by a proprietary company, ASIC records the details of the top twenty members of the class (based on shareholdings). The details of any other members holding the same number of shares as the twentieth ranked member will also be recorded by ASIC on the database. Where available, historical records show that a member has ceased to be ranked amongst the top twenty members. This may, but does not necessarily mean, that they have ceased to be a member of the company.

Name: [redacted]
Address:

Class	Number held	Beneficially held	Paid	Document number
ORD	15	yes	FULLY	6EQH52074

Name: GREEN CYCLE HOLDING PTY LTD
ACN: 642 244 639
Address: Suite 403, 65 York Street, SYDNEY NSW 2000

Class	Number held	Beneficially held	Paid	Document number
ORD	85	yes	FULLY	6EBZB2390

Documents

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ASIC
Australian Securities & Investments Commission

Current Company Extract

Name: GREEN CYCLE HOLDING PTY LTD
ACN: 642 244 639

Date/Time: 22 October 2024 AEST 08:11:59 AM

This extract contains information derived from the Australian Securities and Investments Commission's (ASIC) database under section 1274A of the Corporations Act 2001.

Please advise ASIC of any error or omission which you may identify.

Share Structure

Class	Description	Number issued	Total amount paid	Total amount unpaid	Document number
ORD	ORD	100	100.00	0.00	1EMG94750

Members

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Name: [redacted]
ACN:
Address:

Class	Number held	Beneficially held	Paid	Document number
ORD	100	no	FULLY	6EBZB2389

Documents

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Date received	Form type	Date processed	Number of pages	Effective date	Document number
14/12/2021	484A1 Change To Company Details Change Officeholder Name Or Address	14/12/2021	2	14/12/2021	2ESM39215
13/05/2024	484 Change To Company Details 484B Change Of Registered Address 484C Change Of Principal Place Of Business (Address) 484A2 Change Member Name Or Address	13/05/2024	2	13/05/2024	6EBZB2389

End of Extract of 2 Pages

ASIC
Australian Securities & Investments Commission

Current Company Extract

Name: MR LYU PTY LTD
ACN: 642 242 233

Date/Time: 22 October 2024 AEST 08:15:05 AM

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Class	Description	Number issued	Total amount paid	Total amount unpaid	Document number
ORD	ORD	100	100.00	0.00	1EMG93320

Members

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Name: [redacted]
Address:

Class	Number held	Beneficially held	Paid	Document number
ORD	15	yes	FULLY	6EQZ90117

Name: [redacted]
Address:

Class	Number held	Beneficially held	Paid	Document number
ORD	85	yes	FULLY	6EBZB2387

Documents

Note: Where no Date Processed is shown, the document in question has not been processed. In these instances care should be taken in using information that may be updated by the document when it is processed. Where the Date Processed is shown but there is a zero under No Pages, the document has been processed but a copy is not yet available.

Date received	Form type	Date processed	Number of pages	Effective date	Document number
14/12/2021	484 Change To Company Details 484A1 Change Officeholder Name Or Address 484A2 Change Member Name Or Address	14/12/2021	3	14/12/2021	2ESM39214
01/12/2022	484E Change To Company Details Appointment Or Cessation Of A Company Officeholder	01/12/2022	2	01/12/2022	3EOX89548
23/12/2022	484N Change To Company	23/12/2022	2	23/12/2022	3EQN1729

LIVE Current Status - Registered: Registered/protected

Plasrefine recycling Pty Ltd

PLASREFINE RECYCLING PTY LTD Australia Trademark Information

By Aunano Pty Ltd Share

The **PLASREFINE RECYCLING PTY LTD trademark was assigned an Application Number #2131827** by the Australia Intellectual Property Office (IP Australia). Trademark Application Number is a Unique ID to identify the PLASREFINE RECYCLING PTY LTD mark in IP Australia.

The PLASREFINE RECYCLING PTY LTD mark is filed in the category of **Class 001** Chemicals for use in industry, science and photography, as well as in agriculture, horticulture and forestry; unprocessed artificial resins, unprocessed plastics; fire extinguishing and fire prevention compositions; tempering and soldering preparations; substances for tanning animal skins and hides; adhesives for use in industry; putties and other paste fillers; compost, manures, fertilizers; biological preparations for use in industry and science. , **Class 039** Transport; packaging and storage of goods; travel arrangement. , **Class 040** Treatment of materials. . The legal correspondent for PLASREFINE RECYCLING PTY LTD trademark is **Baxter Patent Attorneys Pty Ltd** , NSW 2000, AUSTRALIA . **The current status of the PLASREFINE RECYCLING PTY LTD filing is Registered: Registered/protected.**

Based on Aunano Pty Ltd, the PLASREFINE RECYCLING PTY LTD trademark is used in the following business: Plastics in the form of chips; Plastics in the form of flakes; Plastic products in the form of pellets; Plastics in the form of granules; Plastics in the form of raw materials; Polyesters; Co-polyester resins; Polyester resins (semi-finished); Polyester resins (unprocessed); Unsaturated polyester; Unsaturated polyester resins; Resins (chemical) , Collection (transport) of waste and trash; Transportation of waste; Storage of waste; collection, transportation, and storage of plastic waste , Destruction of waste and trash; Processing of waste materials; Recycling of waste; Treatment (recycling) of waste; Treatment (transformation) of waste; Treatment of waste; Waste recycling services; Recycling; Recycling of plastics; sorting of plastics; destruction, processing, recycling, and treatment of plastic waste .

Trademark Information, Current Status and Owner(s)

APPLICATION NUMBER	2131827
WORD MARK	PLASREFINE RECYCLING PTY LTD
CURRENT STATUS	Registered: Registered/protected
FILING DATE	Wednesday, October 28, 2020
REGISTERED FROM	Oct 28, 2020
RENEWAL DATE	Oct 28, 2030
REGISTER TYPE	Trade
MARK TYPE	FIGURATIVE
MARK DESCRIPTION	3 ARCS AROUND SEEDLING,STYLISED
PUBLICATION COUNTRY	AUSTRALIA

ASIC
Australian Securities & Investments Commission

Current Company Extract

Name: AUNANO PTY LTD
ACN: 630 147 616

Date/Time: 22 October 2024 AEST 01:23:25 PM

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Share Structure

Class	Description	Number issued	Total amount paid	Total amount unpaid	Document number
ORD	ORDINARY SHARES	100	100.00	0.00	0EEN28639

Members

Note: For each class of shares issued by a proprietary company, ASIC records the details of the top twenty members of the class (based on shareholdings). The details of any other members holding the same number of shares as the twentieth ranked member will also be recorded by ASIC on the database. Where available, historical records show that a member has ceased to be ranked amongst the top twenty members. This may, but does not necessarily mean, that they have ceased to be a member of the company.

Name: [redacted]
Address:

Class	Number held	Beneficially held	Paid	Document number
ORD	20	yes	FULLY	2ESM39216

Name: [redacted]
Address:

Class	Number held	Beneficially held	Paid	Document number
ORD	80	yes	FULLY	2ESM39216

Documents

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Date received	Form type	Date processed	Number of pages	Effective date	Document number
14/12/2021	484 Change To Company Details 484A1 Change Officeholder Name Or Address 484A2 Change Member Name Or Address	14/12/2021	2	14/12/2021	2ESM39216
14/12/2021	484 Change To Company Details 484B Change Of Registered	14/12/2021	2	14/12/2021	2ESM39217

(12) INNOVATION PATENT (11) Application No. **AU 2019100134 A4**
(19) AUSTRALIAN PATENT OFFICE

(54) Title
A PLANT-DERIVED GERMICIDAL DEODORANT FOR ENVIRONMENTAL TREATMENT AND ITS PREPARATION METHOD

(51) International Patent Classification(s)
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A01N 65/06 (2009.01) ***A01N 65/44*** (2009.01)
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A PLANT-DERIVED GERMICIDAL DEODORANT FOR ENVIRONMENTAL TREATMENT AND ITS PREPARATION METHOD

Technical field

The invention relates to a germicidal deodorant, in particular to a plant-derived germicidal deodorant for environmental treatment and a preparation method thereof.

Technical background

Malodorous odor is a major public hazard to the environment. The main sources of urban stench and odor are all kinds of domestic garbage, industrial garbage, domestic sewage, industrial sewage and all kinds of reactions generated in the process of their treatment. With the gradual improvement of people's awareness of environmental protection, the demand for the prevention and treatment of malodorous and peculiar smell problems has become increasingly strong.

Chemical agents play an important role in the sterilization and deodorization of crops. However, due to the long-term use of chemical agents, the resistance frequency of bacteria in most areas exceeds 50%, and the resistance level is up to more than 10,000 times. The single use of chemical agents has completely lost the control effect. In addition, with the continuous enhancement of resistant strains, the number of application increased year by year, and the amount of application also increased exponentially, bringing great pressure to the prevention and treatment and the surrounding environment. Its malpractice is also increasingly prominent, such as drug residues, environmental pollution and pest rampant and so on.

The existing bactericidal deodorants are mostly synthesized from chemical products, which have strong irritation and trace toxicity and are easy to harm human health. At the same time, they have poor decomposition and are easy to cause adverse effects on the environment and secondary hazards.

Summary

The purpose of the invention is to provide a plant-derived germicidal deodorant for environmental treatment and a preparation method thereof, so as to solve the problems raised in the above background technology.

6), in 100-150 ℃, under the condition of 0.01 MPa, after mixing mixture fraction B and the third for damp heat sterilization, namely get botanical extract sterilization deodorant for environmental governance.

As a further scheme of the invention, the extraction time in step 2 is 30-60min.

As a further scheme of the invention: in step 6, the sterilization time of wet heat is 30-60min.

The application of the bactericidal and deodorant mentioned above in the preparation of bactericidal and deodorant products.

Compared with existing technologies, the beneficial effects of the invention are:

1. High efficiency: under the same conditions, the treatment effect of the invention is obviously higher than that of the traditional chemical adsorbent, and the amount is less.

2. Broad-spectrum antibacterial: can effectively kill staphylococcus aureus, escherichia coli, candida albicans and other bacteria and fungi, can kill mites and fly eggs, and is not easy to develop resistance.

3. Safe and non-toxic: through strict testing and a large number of practices, it has been proved that it is harmless and non-toxic to human body and animals, won't cause skin or respiratory system allergy, won't cause all kinds of adverse reactions, can be biodegradable by itself, and thus won't bring secondary pollution.

Description of Embodiments

The technical scheme of the invention is further described in detail below in combination with the specific implementation mode.

Implementation case 1

The invention relates to a plant-derived germicidal and deodorant for environmental treatment, including the following raw materials by weight: 20 parts saponin, 10 parts sophora flavescens, 5 parts turpentine, 15 parts arborvitae, 3 parts licorice, 3 parts tea tree essential oil and 6 parts lemon mint essential oil.

A preparation method of a plant-derived germicidal deodorant for environmental treatment, which is characterized in the following steps:

3) under the condition of 110 ℃ to filtrate distillation in step 2), get fraction B;

4) weigh tea tree essential oil and lemon mint essential oil by weight and mix them evenly to get the second mixture;

5) mix the second mixture with ethanol with a volume percentage of 80% in proportion to the mass volume ratio of 1kg to 5L. Soak it in cold for 24h in dark and then mix it to get the third mixture;

6) under the condition of 100 ℃ and 0.01 MPa, after mixing mixture fraction B and the third for damp heat sterilization, namely get botanical extract sterilization deodorant for environmental governance.

The extraction time in step 2) was 60min.

Step 6) the wet heat sterilization time is 60min.

Implementation case 3

The invention relates to a plant-derived germicidal and deodorant for environmental treatment, including the following raw materials by weight: 25 parts saponin, 15 parts sophora flavescens, 8 parts turpentine, 18 parts arborvitae, 5 parts licorice, 10 parts tea tree essential oil and 10 parts lemon mint essential oil.

A preparation method of a plant-derived germicidal deodorant for environmental treatment, which is characterized in the following steps:

1). Weigh saponin, sophora sophora, turpentine, platycladus platycladis and liquorice by weight, and then mechanically crush and mix them.

2) in accordance with the quality, will be the first mixture volume ratio is 1 kg, the ratio of 10 l mixed with the volume percentage of 80% ethanol, avoid light cold soak 30 h, then under the condition of 20 ℃ and 60 hz ultrasonic extraction, vacuum suction filter, collecting filtrate A;

3), under the condition of 100 ℃ to filtrate distillation in step 2), get fraction B;

4) weigh tea tree essential oil and lemon mint essential oil by weight and mix them evenly to get the second mixture;

5) mix the second mixture with ethanol with a volume percentage of 80% in proportion to the mass volume ratio of 1kg to 5L, and soak it in cold in dark for 20h, then mix it to get the third mixture;

Compared with embodiment 4, it contains no saponin, sophora sophora, turpentine and platycladus orientalis, the others are the same as embodiment 4.

Comparison sample 2

Compared with embodiment 4, it is free of saponin and sophora sophora, and the others are the same as embodiment 4.

Comparison sample 3

Compared with embodiment 4, without turpentine and platycladus orientalis, the others are the same as embodiment 4.

Bactericidal experiment 1

The same dose of embodiment 4 and the ratio of 1-3 of the plant-derived bactericidal deodorant were applied to staphylococcus aureus, and the action time and average killing effect were shown in table 1 below:

Table 1

Group	Operating time (min)	Average killing effect (%)
Comparison sample 1	60	30
Comparison sample 2	60	60
Comparison sample 3	60	65
Comparison sample 4	60	99

Bactericidal experiment 2

E. coli was treated with the same dose of embodiment 4 and a plant-derived bactericidal deodorant with a ratio of 1-3. The action time and the average killing effect are shown in table 2 below:

Table 2

Group	Operating time (min)	Average killing effect (%)
Comparison sample 1	30	20
Comparison sample 2	30	50
Comparison sample 3	30	60
Comparison sample 4	30	96

Bactericidal experiment 3

The same dose of embodiment 4 and the ratio of 1-3 of the plant-derived bactericidal deodorant were applied to candida albicans, and the action time and average killing effect were shown in table 3 below:

Table 3

Group	Operating time (min)	Average killing effect (%)

adverse reactions, can be biochemical degradation by oneself, and therefore will not bring secondary pollution.

The better embodiment of the present invention is described in detail above, but the present invention is not limited to the above mentioned embodiment. Within the knowledge possessed by ordinary technicians in this field, various changes can be made without deviating from the purpose of the present invention.

6), in 100-150 ℃, under the condition of 0.01 MPa, after mixing mixture fraction B and the third for damp heat sterilization, namely get botanical extract sterilization deodorant for environmental governance.

5. According to the preparation method of plant-derived germicidal deodorant for environmental treatment described in claim 4, its characteristics lie in that the extraction time in step 2) is 30-60min.

6. According to the preparation method of plant-derived bactericidal and deodorant for environmental treatment described in claim 4, its characteristics are as follows: in step 6), the wet heat sterilization time is 30-60min.

7. Germicidal and deodorant extracted from plant sources for environmental treatment as described in claim 1 is characterized by the application of any of the germicidal and deodorant described in claim 1-4 in the preparation of germicidal and deodorant products.

https://www.dcceew.gov.au/environment/protection/npi/substances/fact-sheets/ethanol-ethyl-alcohol#:~:text=Ethanol%20is%20a%20clear%2C%20colourless,by%20the%20National%20Pollutant%20Inventory.

Australian Government

Department of Climate Change, Energy, the Environment and Water

Ethanol (ethyl alcohol)

On this page

- Overview
- Health effects
- Environmental effects
- Sources of emissions
- References

Description

Ethanol is present in alcoholic drinks (beer, wine, spirits) when diluted. It is used as a topical agent to prevent skin infections, in pharmaceutical preparations (e.g. rubbing compounds, lotions, tonics, colognes), cosmetics, and in perfumes. Ethanol may be present in fuels, labelled as ethanol blended fuels, and is used as an industrial solvent for fats, oils, waxes, resins, and hydrocarbons. It is used to make many chemical compounds, lacquers, plastics and plasticizers, rubber and rubber accelerators, aerosols, mouthwash products, soaps and cleaning preparations, polishes, surface coatings, dyes, inks, adhesives, preservatives, pesticides, explosives, petrol additives/substitutes, elastomers, antifreeze, yeast growth medium, human and veterinary medicines and as a dehydrating agent.

Substance details

Substance name: Ethanol

CASR number: 64-17-5

Molecular formula: C_2H_6O

Synonyms: ethyl alcohol

Physical properties

Ethanol is a clear, colourless liquid with a characteristic pleasant odour and burning taste. It is highly flammable. Ethanol is used to dissolve other chemical substances and mixes readily with water and many organic liquids. Ethanol is considered a volatile organic compound by the National Pollutant Inventory.

Melting Point: -114°C

Boiling Point: 78.5°C

Specific gravity: 0.8

Flash point: 9-11°C

Chemical properties

Ethanol rapidly absorbs water from the air. It mixes readily with most organic liquids.

Further information

The National Pollutant Inventory (NPI) holds data for all sources of ethanol emissions in Australia.

- Australia's ethanol emission report

Description

Symptoms of exposure to ethanol may include irritation to the eyes, skin and nose, drowsiness and headache. Other symptoms may include stupor, nausea, mental excitement or depression, vomiting, flushing and coma. Exposure to high concentrations of ethanol vapours may cause irritation of the eyes, skin and respiratory tract, loss of coordination (ataxia), sleepiness, narcosis (stupor or unconsciousness), impaired perception and lack of coordination. It can also cause lowered inhibitions, dizziness, shallow respiration, unconsciousness and death. Ethanol is harmful by ingestion, inhalation or by skin absorption.

Repeated contact can dry the skin resulting in the skin cracking, peeling and itching.

Ethanol can depress the central nervous system, the eyes and upper respiratory tract (nose and throat). Ethanol can cause irritation, headache, fatigue and loss of concentration.

Consumption of ethanol during pregnancy may affect the unborn child, resulting in spontaneous abortion, developmental problems, or birth defects. This is known as 'foetal alcohol syndrome'. Chronic ingestion of ethanol may cause liver cirrhosis, affect the nervous system and affect the glands in humans.

Ethanol may cause mutations (genetic changes).

Ethanol is rapidly oxidised by the body to carbon dioxide and water, with no cumulative effect. Concentrations below 1000 parts per million (ppm) usually produce no signs of intoxication.

Entering the body

Ethanol can enter the body by ingestion, inhaling fumes or by absorption through the skin.

Exposure

Exposure to ethanol can be from the intake of food or beverages containing alcohol or from a wide range of consumer products containing ethanol, or in from a wide range of industries that use or produce ethanol.

Ethanol is present in low levels in the environment, it is a natural product that results from the fermentation of plants.

Workplace exposure standards

Safe Work Australia sets the workplace exposure standard for ethanol through the workplace exposure standards for airborne contaminants:

- Maximum eight hour time weighted average (TWA): 1000 parts per million (1880 mg/m^3)

These standards are only appropriate for use in workplaces and are not limited to any specific industry or operation. Make sure you understand how to interpret the standards before you use them.

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HUNDREDS OF TOXIC CHEMICALS PRESENT IN RECYCLED PLASTIC PELLETS

IPEN BRIEF

April 2024

IPEN
for a toxics-free future

SUMMARY

An analysis published in 2023 looked at chemicals in recycled plastic pellets collected by IPEN member groups from thirteen countries. The testing identified and quantified 491 chemicals in the recycled plastic, including pesticides, industrial chemicals, PCBs, and other toxic substances. The results add to the increasing evidence that plastic recycling spreads toxic chemicals uncontrollably and is not a solution to the plastics crisis.

A WIDE RANGE OF CHEMICALS ARE KNOWN TO BE PRESENT IN PLASTICS

Chemicals are added to plastics to provide properties such as flexibility, durability, and color. In addition, chemicals formed during production, use, and recycling of plastics are present in the plastic material. A recent report estimated that more than 16,000 chemicals are potentially used or present in plastic materials and products. No information about human health or environmental impacts is available for a majority of these chemicals. However, where information is available, it shows that many of the chemicals have been identified as toxic (often called "chemicals of concern" or "potential concern").

Many chemicals present in plastics are released when plastics are produced, used, recycled, and disposed of. This means that plastics are a source of human exposure to toxic chemicals and environmental contamination throughout their life cycle. For example, many of these chemicals are known to disrupt the endocrine system, leading to health impacts such as reproductive problems, early female puberty, certain types of cancers, and neurobehavioral disorders.

During mechanical recycling, plastics from many sources are mixed and melted to make plastic pellets, which in turn are used to make new products. The chemicals that are present in the plastics going into the recycling process will be carried over to the pellets and

the new products. In this way, recycling leads to an uncontrolled spread of an unknown mixture of chemicals into the new products. While it is technically possible to extract chemicals from plastics using chemical recycling, this method has overall proven itself to be a failure and a false solution to the plastics crisis. In addition, the chemicals extracted from the plastics become toxic wastes that need to be handled in a way that protects human health and the environment from their impacts.

There are some plastics known to contain toxic brominated flame retardants that can be separated out with current techniques, but these are a very small fraction of all plastic waste, and there is no general method to separate out plastics that contain toxic chemicals. Also, the large volume of plastics produced makes it impossible to effectively sort plastic wastes.

The presence of toxic chemicals in recycled plastic products has been shown in many studies, including in food packaging, kitchen utensils, toys and other children's products. In addition, when plastics are heated during the recycling process, new toxic chemicals can be generated, such as the highly toxic chlorinated and brominated dioxins.

Finally, contamination caused by certain uses of plastics can also constitute a source of chemicals in plastics. This includes, for example, pesticide containers, pharmaceutical bottles, and personal care products.

Although some countries and regions regulate certain uses of recycled plastics, for example, in food contact materials, there are currently no international requirements on the monitoring of chemicals in recycled plastics or on making the chemical content of plastic materials and products publicly available and accessible.

COLLECTION OF RECYCLED PELLETS FROM 24 COUNTRIES

In 2020, NGOs in 24 countries visited local, small-scale recycling facilities and purchased bags of recycled High-Density Polyethylene (HDPE) pellets. This type of plastic was selected since it is one of the most used and recycled types of plastic. According to producers and retailers of recycled HDPE, uses include plastic pipes; plastic lumber for playgrounds; picnic tables and outdoor patios; non-food bottles such as detergent containers, cleaning products, conditioners and shampoos; and children's toys.[1]

The pellets were initially analyzed for the presence of the chemical bisphenol A, and several chemicals from the two groups of brominated flame retardants and benzotriazole UV stabilizers.

Following the initial study, 28 samples of pellets from 13 countries were sent for a broader analysis of their chemical content. These pellets were from different batches than the initially analyzed pellets. This analysis included a target analysis looking for specific chemicals and a non-target analysis to capture additional chemicals.

Tab 1: Overview of groups of chemicals detected in the broad analysis of recycled pellets.

CLASS OF CHEMICAL	NUMBER OF CHEMICALS DETECTED
Pesticides and biocides	162
Pharmaceuticals	89
Industrial chemicals	65
Plastic additives	45
Polycyclic aromatic hydrocarbons (PAHs)	21
Food ingredient	12
Polychlorinated biphenyls (PCBs)	12
Surfactants	10
Fragrances	8
UV filters	6
Dye	4
Stimulants	4
Corrosion inhibitor	3
Polybrominated diphenyl ethers (PBDEs)	2
Repellents	2
Human metabolites	2
Polychlorinated naphthalene (PCNs)	1

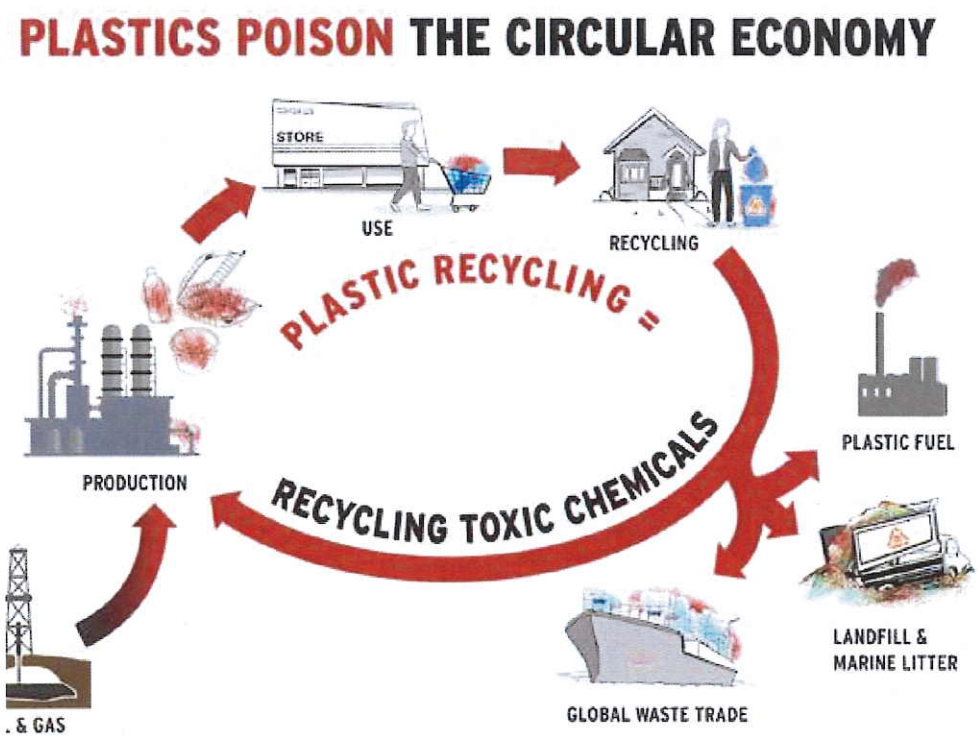
RESULTS IN BRIEF

The initial analysis covered 18 chemicals in total, and two pellet samples contained 16 of these chemicals. More than half of the samples (54%) contained 11 or more chemicals, and 21 pellet samples contained all three targeted groups of chemicals. All the pellet samples contained one or more of the targeted chemicals. A detailed description of the results can be found in the report Widespread chemical contamination of recycled plastic pellets globally.

The broader analysis published in 2023 showed that traces of hundreds of chemicals were present in the recycled pellets. In total, 491 identified chemicals were detected and quantified, and the identity of 170 additional compounds were tentatively annotated. The chemicals were grouped according to their uses, as shown in Table 1. The full list of chemicals is publicly available online.

Overall, 33 chemicals were detected in all the recycled pellets, see table in Annex 3. These included six pesticides, six personal care products, and four pharmaceuticals, in addition to plastic additives and industrial chemicals.

The most commonly detected types of chemicals were pesticides/biocides (162 chemicals) and pharmaceuticals (89 chemicals). None of these chemicals are intentionally added to the plastics but are present as a result of contamination. Only 45 of the chemicals detected are categorized as plastic additives.



WHAT DOES THIS MEAN?

The results show that recycled HDPE pellets contain a wide variety of chemicals not intentionally added to the plastics as well as additives that serve no purpose in the recycled pellets. The sources are most likely a diverse input of plastics to the recycling process, including containers of pesticides, pharmaceuticals, and personal care products. The presence of flame retardants indicates that plastics from electronic waste were used.

While most of the chemicals were present only at low concentrations, the number of chemicals in each pellet sample raises the concern that they can cause combined toxic effects. It is well known that even if chemicals are present in a mixture at concentrations too low to cause impact on their own, many chemicals together can still have a significant impact. In addition, endocrine-disrupting chemicals can have an impact even at low concentrations, which makes them especially relevant when considering potential mixture effects.

Finally, the presence of these chemicals in the recycled pellets highlights the concern that plastic recycling and waste workers are likely being exposed to toxic chemicals at work. This includes direct exposure to pesticides, industrial chemicals, pharmaceuticals, and other residues of toxic substances when workers handle plastic waste, and exposure through air, dust, and water during processes such as washing, compounding, flaking, and melting of plastics.

ACTION IS NEEDED

Recycling has been put forward as a solution to the plastics crisis. However, due to the intentional and unintentional addition of toxic plastic chemicals, recycling plastics means recycling toxic chemicals. Therefore, it constitutes a false solution.

Three things are urgently needed to protect the human right to a clean, healthy, and sustainable environment, including a safe and healthy working environment:

1. The intentional use of toxic chemicals in plastics needs to be eliminated.

2. The unintentional presence of toxic chemicals in plastics needs to be prevented.

3. Mandatory requirements for making information about the chemical content of plastics and their hazard information publicly available and accessible. In addition, mandatory requirements should be put in place to ensure that hazard- and other health-related information is communicated to consumers, workers, and the general public.

The extensive international trade of chemicals, plastics, and plastic waste means that international controls need to be put in place, utilizing all available and emerging tools. These include, for example, multilateral environmental agreements specifically targeting chemicals, such as the Stockholm and Basel Conventions, and chemicals-related Conventions, Resolutions, and Recommendations under the International Labour Organization (ILO) and the World Health Organization (WHO). In addition, the future Plastics Treaty is an opportunity to protect human health and the environment from the harmful effects of plastics throughout their full life cycle.

The Stockholm Convention, which addresses Persistent Organic Pollutants (POPs), can be utilized in several ways:

- POPs in plastics should be listed for global elimination, including groups of POPs with similar properties and related compounds.
- The provision of the Convention that "Wastes containing POPs listed under the Convention, including products and articles upon becoming wastes are not permitted for recycling" must be implemented and enforced.[2]
- Parties to the Convention must meet their obligations to "Develop appropriate strategies for identifying (i) stockpiles consisting of or containing chemicals listed either in Annex A or Annex B and (ii) Products and articles in use and wastes consisting of, containing or contaminated with a chemical listed in Annex A, B or C.[3]

The Basel Convention, which addresses waste management and trade, can be utilized to prevent plastics containing and contaminated with toxic chemicals from being imported into a country as waste, for example, by prohibiting the import of plastic wastes through the Prior Informed Consent procedure or classifying all plastic waste or certain types of plastic wastes as a hazardous waste. The latter would mean that exports will be prohibited from OECD countries to many low- and middle-income countries under the Ban Amendment (Annex VII).[4]

Country obligations arising from ILO International Labour Standards[5] such as the Chemicals Convention (C170) and the Occupational safety and health conventions

(C155, C161 and C187) must be met, and can be utilized further for stronger protection of workers. The hierarchy of controls that prioritizes elimination and substitution of toxic chemicals should also be applied.

Finally, the new Plastics Treaty will be an important instrument to address toxic chemicals in plastics in many ways. To do so, it is important that the Treaty contains strong, legally binding control provisions that call for:

- the elimination of toxic chemicals throughout the full life cycle of plastics;
- mandatory, publicly available, and accessible disclosure of information on chemicals; and,
- measures to control plastic production volumes.

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1 Examples from https://www.letsrecycleit.eu/hdpe-recycling/; https://www.aaapolymer.com/hdpe-recycling/; https://www.plasticexpert.co.uk/plastic-recycling/hdpe-plastic-recycling/ accessed on March 18th, 2024.

2 See Article 6.1.(d).(iii) of the Convention

3 See Article 6.1.(a).(i) and (ii) of the Convention

4 https://ipen.org/documents/basel-ban-amendment-guide

5 https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12200:0::NO::P12100_ILO_CODE:

ANNEX 1: ORGANIZATIONS PARTICIPATING IN THE STUDIES

IPEN would like to thank the following NGOs for their instrumental part in these studies (in alphabetical order):

Action sur l'Environnement et le Développement (AED), Republic of the Congo

AGENDA for Environment and Responsible Development (AGENDA), Tanzania

Arnika, Czech Republic

Association pour la Défense de l'Environnement et des Consommateurs (ADEC), Senegal

Centre For Earth Works (CFEW), Nigeria

Centre for Environmental Justice (CEJ), Sri Lanka

Center for Public Health and Environmental Development (CEPHED), Nepal

Centre for Zero Waste & Development, Zambia

Citizen consumer and civic Action Group (CAG), India

Consumers Association of Penang (CAP), Malaysia

Cooperation for Sustainable Development, Kazakhstan

Ecological Alert and Recovery Thailand (EARTH), Thailand

Environmental Ambassadors for Sustainable Development, Serbia

Environment and Social Development Organization (ESDO), Bangladesh

Fronteras Comunes, Mexico

Global Initiative for Environment and Reconciliation (GER), Rwanda

Indowater, Indonesia

Interfacing Development Interventions For Sustainability (IDIS), Philippines

Kenana NGO for Sustainable Development, Egypt

Les Amis de la Terre, Togo

Pesticide Action Network (PANeM), Mauritius

Research Centre for Gender, Family and Environment in Development (CGFED), Vietnam

Rozbudovo, Ukraine

Taller Ecologista, Argentina

Terre et Développement, Cameroon

Toxics Link, India

Wild at Heart Legal Defense Association, Taiwan

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For additional resources, see: https://stoppoisonplastic.org/

ANNEX 3:
CHEMICALS DETECTED IN ALL SAMPLES OF RECYCLED PELLETS

CHEMICAL	USE	MAXIMUM CONCENTRATION DETECTED (NG/L)
N-Ethyl-o-toluenesulfonamide	Plasticizer	24,019,657
4-Hydroxy-1-(2-hydroxyethyl)-2,2,6,6-tetramethylpiperidine	Plastics stabilizer	56,272
DEET	Insect repellent	18,160
Melamine	Plastic component	14,372
Benzophenone-3	Plastics stabilizer	12,844
TMDD	Surfactant	9,060
Palmitoylethanolamide	Pharmaceutical	4,724
Triphenylphosphine oxide	Flame retardant	3,435
Tri(butoxyethyl)phosphate	Flame retardant and plasticizer	3,110
Triphenylphosphate	Flame retardant and plasticizer	1,956
Lauramidopropylbetaine	Personal care and household products	1,951
Azelaic acid	Pharmaceutical	1,673
Lauryl diethanolamide	Personal care and household products	1,598
3,5,6-Trichloro-2-pyridinol	Pesticide (chlorpyrifos metabolite)	1,578
Lauric isopropanolamide	Personal care and household products	1,159
N,N-Dimethyltetradecylamine-N-oxide	Cleaning products	1,023
N_Lauroylethanolamine	Personal care products	1,001
Cotinine	Metabolite of nicotine	876
Tris(1-chloro-2-propyl)phosphate	Flame retardant	571
Diethofencarb	Pesticide	438
Tri-isobutylphosphate	Solvent	436
2-Octyl-4-isothiazolin-3-one	Pesticide	406
Ephedrine	Pharmaceutical	371
2-Benzothiazolesulfonic acid	Rubber and dye production	369
2-(2-Methoxyethoxy)ethanol	Solvent	324
Tetraethylene glycol butyl ether	solvent	309
Methenamine	Pharmaceutical	149
Benzyldimethyltetradecylammonium	Surfactant	135
Dodecane-12-lactam	Monomer for polymerization of polyamide	96
N,N-dimethyldecan-1-amide	Solvent in pesticide formulations	93
Methiocarb sulfone	Pesticide	28
Methyldiethanolamine	Washing and cleaning products	17
Tris(2-chloroethyl)phosphate	Flame retardant and plasticizer	9

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accordance with the SIA Guideline. The Department's assessment in this section is based on the final versions of the SIA (the Amendment SIA and Addendum SIA) which reflect the amended development.

134. The Department acknowledges the significant number of concerns raised about impacts on the local community and recognises that many of the social impacts relate to traffic, air quality, fire, visual and other environmental impacts. These have been assessed separately in this report (see Sections 6.2 to 6.5).

135. The Department acknowledges it is difficult to accurately predict the nature and scale of social impacts, particularly in relation to intangible aspects and perceived impacts which may affect the community.

136. The site is located at the southern edge of the SHIP at the fringe of Moss Vale, with the nearest houses on Beaconsfield Road, 220 m to the south-east. Some of these residential properties have a direct line of sight to the development and views are also possible from the rear boundary of properties on Bulwer Road, located some 320 m to the south. From the public submissions, the Department has noted there is considerable concern in the community relating to the siting of the development close to residential areas (the 'wrong site').

137. The SIA identified some less tangible social impacts which would remain despite mitigation and management strategies. These include the changed character of the area affecting people's sense of place, surroundings and amenity, as well as psychological health risks from stress, anxiety, and fear.

138. In an effort to alleviate community and Department concerns, the Department notes the Applicant has made refinements to the development over time and has proposed a range of mitigation and management strategies to address the identified social impacts. The amendments to the development relevant to the key areas of concern include:

- Traffic impacts: change in site access route to the 'north-south' via a new level crossing – utilising Braddon Road and Collins Road. This removes the use of Beaconsfield Road, the formerly proposed 'east-west' access road, and avoids schools and residential areas to the south
- Visual impacts: significant increase in landscaping, including early planting of mature trees, use of landscaped mounds to reduce views of the buildings, landscaping of adjacent land, reduction in building heights from 18m to 15.5m, and refinement of architectural design to soften appearance
- Noise and emissions: operations are to be carried out within enclosed buildings with automatic closing doors which would be oriented away from residential areas
- Other impacts: a reduction in operational water consumption and altered construction practices to ensure there are no vibration effects on the ABR facility.

6.1.4 Conclusion

139. After reviewing all the relevant documentation and considering Professor Ryan's advice, the Department finds the Amendment SIA and Addendum SIA have assessed the social costs and benefits of the development in significant and sufficient detail and represent good practice in social impact assessment. The Department also notes the mitigation measures proposed by the Applicant in the SIA are extensive and designed to alleviate social impacts as much as possible, including perceived impacts.

140. The Department notes that concerns regarding the changing character of the area from primarily rural residential to business and industrial uses can be attributed to the creation of the MVEC (now SHIP) and associated land rezoning more than ten years ago. While the draft SHIP Masterplan intends for the site to be part of a Sub-Precinct 'Bio-Tech' around the ABR facility, the Department notes the SHIP Masterplan is yet to be finalised and is not currently in effect. Notwithstanding, the development has been designed to minimise its visual impact through appropriate landscaping and façade treatment and has reduced traffic impacts by rerouting the site access to avoid residential areas. Air quality, noise and