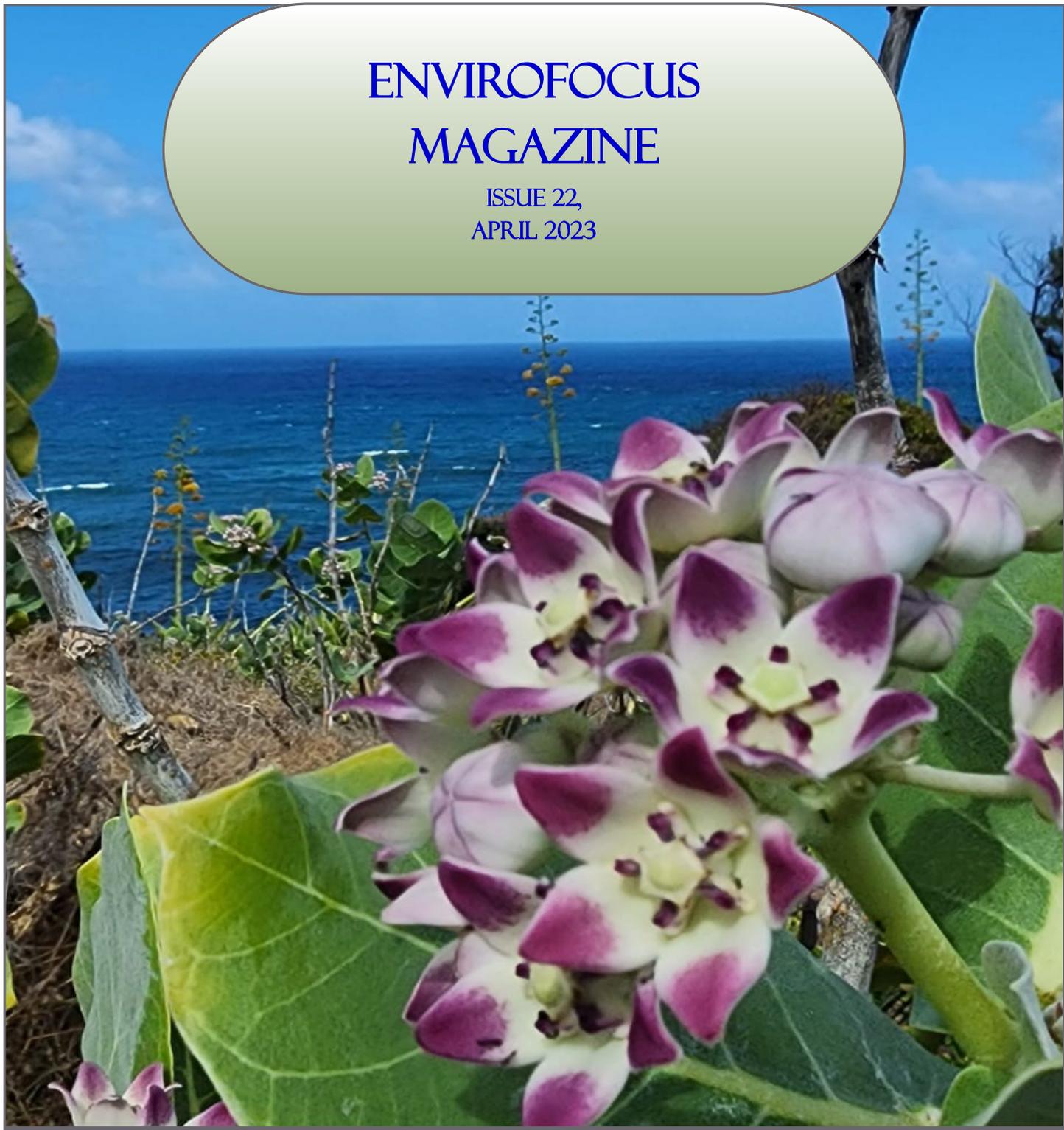




ENVIROFOCUS MAGAZINE

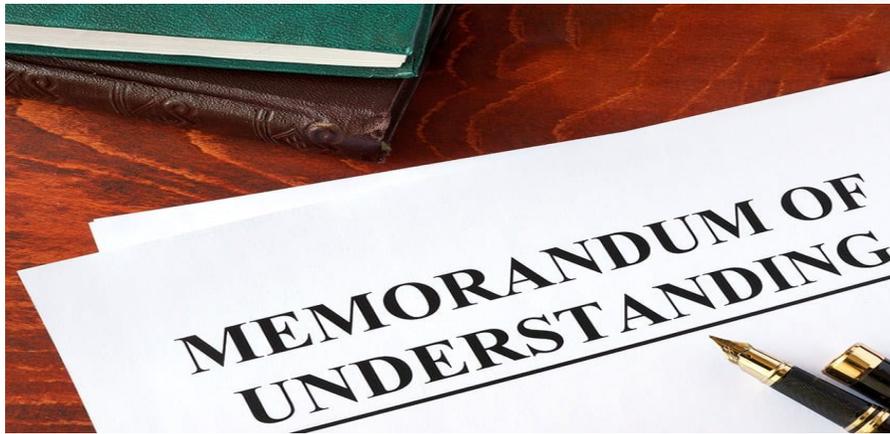
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ENVIRONMENTAL PROTECTION DEPARTMENT

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PROTECTION DEPARTMENT



A Historic MoU

August 12, 2022, heralded the end of one part of the journey and the start of exciting times; as the Environmental Protection Department (EPD) and Science and Technology Faculty of the University of the West Indies Cave Hill Campus, have formalized their decade long relationship, by the signing of a Memorandum of Understanding (MoU) by Professor Clive Landis, Pro Vice-Chancellor and Principal of the UWI, Cave Hill Campus and Mr. Charley Browne, Permanent Secretary of the Ministry of Environment and National Beautification.

Over the years, the EPD has facilitated graduate students from the UWI undertaking research, on an ad hoc basis, Notable topics of research included;

- ◇ conducting investigations into Contaminants of Emerging Concern in Ground Water Aquifers and Coastal Areas in Barbados, West Indies;
- ◇ the identification of the sources of nitrate concentrations in Barbados' public water supply;
- ◇ utilizing Geographical Information Systems to determine spatial distribution of the vulnerability of aquifers of Barbados to nitrates, Faecal Coliform and Faecal Streptococci; and;

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air quality TIPS

- ◇ Do not burn anything! It is a nuisance and can make you and other people sick.
- ◇ Truck drivers! Reduce dust emissions by covering sand, stone and similar materials you are transporting.
- ◇ Drive slowly on unpaved roads and on construction sites to cut down on dust.
- ◇ Do not do bodywork or spray painting in the open. Activities like these should only be done in special booths and workshops in approved locations. Contact the Environmental Protection Department for more information.

A Historic MoU (Continued from Page 1)



Professor Clive Landis, Pro Vice-Chancellor and Principal of the UWI, Cave Hill Campus (L) and Mr. Charley Browne Permanent Secretary of the Ministry of Environment and National Beautification (R) signing the MoU on August 12, 2022.

- ◇ assessing the impact of precipitation and geographic factors on groundwater quality between 1987 and 2012 in Barbados.

The fruits borne of these programmes have aided the EPD in meeting the legislative requirements stipulated in the Marine Pollution Control Act. These are also consistent with the four objectives of the Department Strategic Plan to:

- ◇ Understand our Environment
- ◇ Protect our Environment and Human Health from Man-Made Sources of Pollution;
- ◇ Foster Resource Efficiency & Organizational Excellence;
- ◇ Promote Environmental Stewardship

This MoU establishes a formal framework for cooperation on activities to support the provision of data-driven advice to decision makers based on sound scientific research; while providing limited funding and opportunities for experiential learning for undergraduate and graduate students.

Pro-Vice Chancellor and Principal of The UWI, Professor Clive Landis, noted that it was a privilege to work with the EPD as knowledge generators, and as a research community, to analyse problems and deliver solutions on behalf of society to help safeguard the environment. He said their collaboration was rooted in the Barbados National Strategic Plan and the EPD's Strategic Plan 2016-2025, as noted in the MOU and regarded it as "a much welcomed opportunity" to express thanks for the long-standing, harmonious relationship developed with the EPD, working together in a common quest to safeguard our environment.

This MoU will help support environmental management through policy development and research into the effects of pollution on local ecological system such as; nutrient impacts on groundwater and the marine environment, littering and solid waste management and area noise and air pollution driven in part by the triple planetary crises of climate change, nature and biodiversity loss, and pollution and waste.



Entertainment Noise

Music has become a part of many activities from religious activities to secular ones and from government to private events. Music is an integral component of fetes, concerts, karaoke sessions, restaurants, commercial stores seeking to entice customers, religious crusades, parades, national festivals like Kadooment Day, promotional events, sporting events and more. And while music is a welcomed and necessary feature of many activities, it can be harmful at high levels even to the persons enjoying the music and, can be annoying to persons living or working in surrounding areas. According to the World Health Organization, exposure to sound levels above 70 dB for a prolonged period of time can start to damage a person's hearing. On the other hand, immediate damage can occur in children and adults at levels above 120 dB and 140 dB simultaneously.

Some say it is not possible to live on "this small rock called Bim" and have entertainment events without annoying surrounding persons..... but is this true? This is an excellent question. And the answer is not simple as it will require a change in behaviours, attitudes and the introduction of legislation along with the requisite resources to identify limits, enforce penalties and outline a framework for the management of noise in Barbados. Some of the solutions to this question that have been suggested are given below and it is likely that a combination of them or even other suggestions will need to be employed to manage noise in Barbados:

- ◇ Pass comprehensive noise legislation and regulations that includes measures, noise limits and penalties for violations. In 2005, the Cabinet of Barbados has accepted the Barbados Noise Policy which adopted the World Health Organisation Community Noise Guidelines as reference standards. However, up to the time of publication there is no legislation with limits and enforcement in place forthcoming, despite the Cabinet approval of the Barbados Noise Policy 2005 being in place, which is a prerequisite for noise legislation.
- ◇ Require that entertainment activities occur indoors or that they must occur indoors after a certain time of the day or night.
- ◇ Identify isolated areas for outdoor entertainment events away from populated areas and designate these as entertainment zones with the appropriate planning restrictions and noise control guidelines.
- ◇ Educate persons conducting events or playing loud music on the impact they can have on surrounding land users and even the damage to their own hearing. They can also be educated on measures that can be employed to reduce the impact on neighbours including orientation, location and size of speakers.
- ◇ Greater restrictions could be placed on entertainment activities that occur regularly near to residences e.g. on the duration of the activity, the number of times per month and the requirement to be indoors.

The above are a few suggestions to handle the growing noise problem associated with entertainment activities. It is true that the revenue generated from entertainment activities helps the economy but it is necessary to manage noise in Barbados.



Effects of Noise

In today's society, noise has grown to be a larger concern.

Excessive environmental noise may lead to;

- ◇ irritability,
- ◇ disruption/ deprivation of sleep,
- ◇ reduced productivity,
- ◇ weariness,
- ◇ tension,
- ◇ impaired cognitive and learning abilities

According to studies frequent and/or extreme exposure to excessive noise can even be a risk to human health resulting in;

- ◇ hearing loss,
- ◇ mental health problems,
- ◇ elevated blood pressure and,
- ◇ Cardiovascular problems.

It is important to be aware of the effects of noise on health and to take measures to reduce excessive exposure to noise in our daily lives.

Microplastics the Hidden Risks

Most of us have grown up around plastics and know of their many convenient types and forms with near unlimited use. From disposable shopping bags, toiletries and sanitary applications (diapers, cosmetics, personal care items), to packaging, housing, electronics, conduit, and pipes, the list is almost endless simply because plastic is a versatile and a cheaper alternative to other materials. We are a society of plastic and we are becoming more so in surprising ways.

Plastic use and production boomed worldwide in the 1950s although the benefits of plastic are enormous such as it was cheaper and lighter than glass packaging. However, it has also added to volume of solid waste being generated and a whole host of known and unknown ecological problems.



Plastic waste . Images courtesy of Tobias Lofquist. www.unsplash.com

Microplastics come from a variety of sources, including the breakdown of larger plastic debris, the shedding of synthetic fabrics, and the use of microbeads in personal care products. These particles are small enough to pass through water filtration systems, which means they can easily enter rivers, lakes, and oceans.

A recent emerging concern is that of the proliferation of microplastics within almost every ecosystem on earth. But what are microplastics? Microplastics are tiny plastic particles that measure less than five millimeters in length. These particles are a growing concern because they are pervasive in the environment and can have negative impacts on wildlife and human health. Microplastics come from a variety of sources, including the breakdown of larger plastic debris, the shedding of synthetic fabrics, and the use of microbeads in personal care products. These particles are small enough to pass through water filtration systems, which means they can easily enter rivers, lakes, and oceans.

Once in the water, microplastics can be ingested by a variety of marine species, including fish, birds, and invertebrates. Ingestion of microplastics by these organisms can lead to a variety of health problems, including reduced growth, reproductive failure, and death. Microplastics may contain hazardous chemicals and can also act as a medium for the transport of toxic chemicals and pollutants, which can further harm wildlife and potentially humans who consume contaminated seafood.

In addition to their effects on wildlife, microplastics can also have negative impacts on human health. Ingestion of microplastics has been linked to a variety of health problems, including digestive and respiratory issues. The long-term effects of microplastics on human health are not yet fully understood, but research is ongoing.

To address the issue of microplastics, governments and organizations around the world are taking steps to reduce the use of plastic and improve waste management. For example, many countries have banned the use of microbeads in personal care products, and some cities have implemented plastic bag bans or charges. Additionally, efforts are being made to develop more effective water filtration systems that can remove microplastics from water sources.

Individuals can also take steps to reduce their contribution to the problem of microplastics. Choosing products made with natural, biodegradable materials, properly disposing of plastic waste, and supporting organizations that work to reduce plastic pollution can all help to combat the problem of microplastics.

In conclusion, microplastics are a pervasive and growing concern due to their negative impacts on wildlife and human health. While efforts are being made to address the issue, individuals can also take steps to reduce their own contribution to the problem.



Moves to tackle Plastic Pollution In Barbados

The United Nations Environment Assembly at its 5th session adopted a resolution in February 2022 to develop an international legally binding instrument on plastic pollution, including in the marine environment. The Executive Director of the United Nations Environment Programme was requested to convene an intergovernmental negotiating committee (INC) and Barbados conducted a National Consultation with stakeholders to voice their concerns. The Environmental Protection Department lead the Barbados team that attended the first meeting of the INC in Uruguay from November 28 to December 2, 2022.

The outcome of the INC was a clear mandate to the United Nations to continue to develop with State Parties and international partners a new internationally legally-binding instrument (ILBI) to “end plastic pollution”. Barbados in conjunction with 39 other small island states led by Samoa, under the umbrella of the Alliance of Small Island States (AOSIS) continue to make its contributions to the secretariat of the INC. The next negotiating meeting is INC-2 which is scheduled to take place from 29 May to 2 June 2023 at the United Nations Educational, Scientific and Cultural Organization (UNESCO) Headquarters in Paris, France. for to its development. AOSIS believes that any instrument designed to combat plastic pollution must be “fit for purpose” i.e. it recognizes the environmental, economic and social dimensions of the global plastic pollution problem.”

“any instrument designed to combat plastic pollution must be “fit for purpose” i.e. it recognizes the environmental, economic and social dimensions of the global plastic pollution problem”

It is imperative that the instrument have the following components in place;

- ◇ Global collective actions should include measures across the full plastic life-cycle, including global goals or targets based on best available scientific and environmental information, that countries must work towards.
- ◇ Nationally-determined actions which are those domestic measures to be taken by Barbados and other member of AOSIS to implement the global actions, taking into account their national circumstances and capabilities, including their respective economies, industry conditions and capacity-constraints. These domestic measures will also include regulatory actions to manage the non-state actors—such as the private sector, within their jurisdiction and control.

Further to the actions required of non-state actors domestically by States, non-state actor should also commit to additional actions such as, participation in multi-stakeholder talks and information sharing, public education campaigns, sourcing alternative feedstock and phasing out hazardous chemicals in plastics.

In order to fully implement the instrument it will require;

- ◇ multiple sources of finance and a financial mechanism that prioritizes Small Island Developing States (SIDS) for simplified and harmonized access to financial resources. is deemed essential for SIDS to meet their obligations and overcome cost barriers.
- ◇ A country-owned and driven determination of needs is suggested for the implementation of the National Adaptation Plans (NAPs) and a trust fund should be established to address plastic pollution in the marine environment. Additionally, technology development and transfer -The ILBI should create hubs or platforms for technology, science, data and information on plastics, sustainability, and circularity. Capacity building is highlighted as an essential element to ensure a just transition to a plastic pollution-free future for SIDS.

EPD Internship Programme 2022

The Environmental Protection Department's Summer Internship Programme welcomed three interns, Shanice Haynes and Antonio Forte of the University of the West Indies and Nadira Ramsay of the Barbados Community College. Carrington into the programme, which was held from July 18th to August 26th, 2022.

During this period, the interns were assigned to various sections in the department such as Solid Waste and Hazardous Materials Management, Derelict Buildings, Air and Noise Pollution Control, Water Quality, Marine Pollution Control and Buildings Development to gain valuable work experience, given insight as to the role and functions of the Environmental Protection Department and to gain an awareness of the myriad of environmental issues facing the country.

At the end of their internship the interns were asked to write a brief report of their experience working at the EPD, which would be shared with our readers.



2022 Interns L-R—Shanice Haynes, Antonio Forte , Nadira Ramsay

Shanice Haynes - UWI

As I fulfilled the role of intern at the Environmental Protection Department (EPD), I experienced very rewarding and eye-opening moments. Throughout the six week period, I shifted through all the sections within the EPD including; Environmental Technical Officers, Marine Pollution, Water Quality, Solid Waste, Air & Noise and the Building Development Section.



Under these various sections, I collected water samples from nearshore marine areas and ground water sources, along with observing locations of solid waste management, derelict buildings and the noise monitoring unit. Being out in the field has supported my growth as a budding scientist as I applied my theoretical knowledge, which was expanded in each of the various sections. Additional duties included creating proposals, creating summarized research documents, updating databases and perusing documents regarding each section.

With the assistance of the supportive supervisors at the EPD, I was successful in achieving all my tasks in a timely manner. While doing this, all the queries I had were answered, which encouraged me greatly to learn more.

Throughout the internship programme, I developed an even greater appreciation for the effort that is taken to maintain and protect the public and the surround environment with regards to all of the sections.

By applying my time management, organizational and interpersonal skills - my work ethic improved greatly. This improvement has contributed greatly to the work at the EPD, creating a mutually beneficial relationship among us.

Based on my knowledge gained throughout the internship with the EPD, I am confident that it will contribute greatly to my career path to be an Environmental Scientist. I look forward to actively playing a role in the protection of the environment and public health.

Nadira Ramsay- Barbados Community College

Working at the Environmental Protection Department (EPD) has been a great experience for me as it played a pivotal role in my future in achieving many skills to be a 'jack of all trades' with the multiple learning opportunities provided during the internship.

I thoroughly enjoyed interacting with staff in each section as they all had fun and welcoming personalities which really made my participation as enjoyable as it was.

From the beginning of the internship, I was informed of the responsibilities EPD holds, which has facilitated an upgraded scope for what environmental protection entails for me; especially with their derelict building section.

What I loved about this internship was the inclusivity each section had with each other and the hardworking employees who were always checking in to make sure we were making progress and encouraging us interns to put our best foot forward.



Antonio Forte- UWI

The opportunity presented to me by the Environmental Protection Department Internship Programme taught me more than I ever expected. Having recently completed my Bachelor's of Science, I expected that it would be the same things I learned at UWI; repeated once more. However, to my surprise it was far from the case.

Our hosts Mr. Justin Yearwood (Environmental Technical Officer) and Mrs. Allison Reeves (Technical Officer) were very welcoming and patient and ensured that we settled in well and taught us how to achieve our various goals efficiently and ensure that the information gathered was accurate and pertinent to the end result of the research or projects we were tasked with completing.

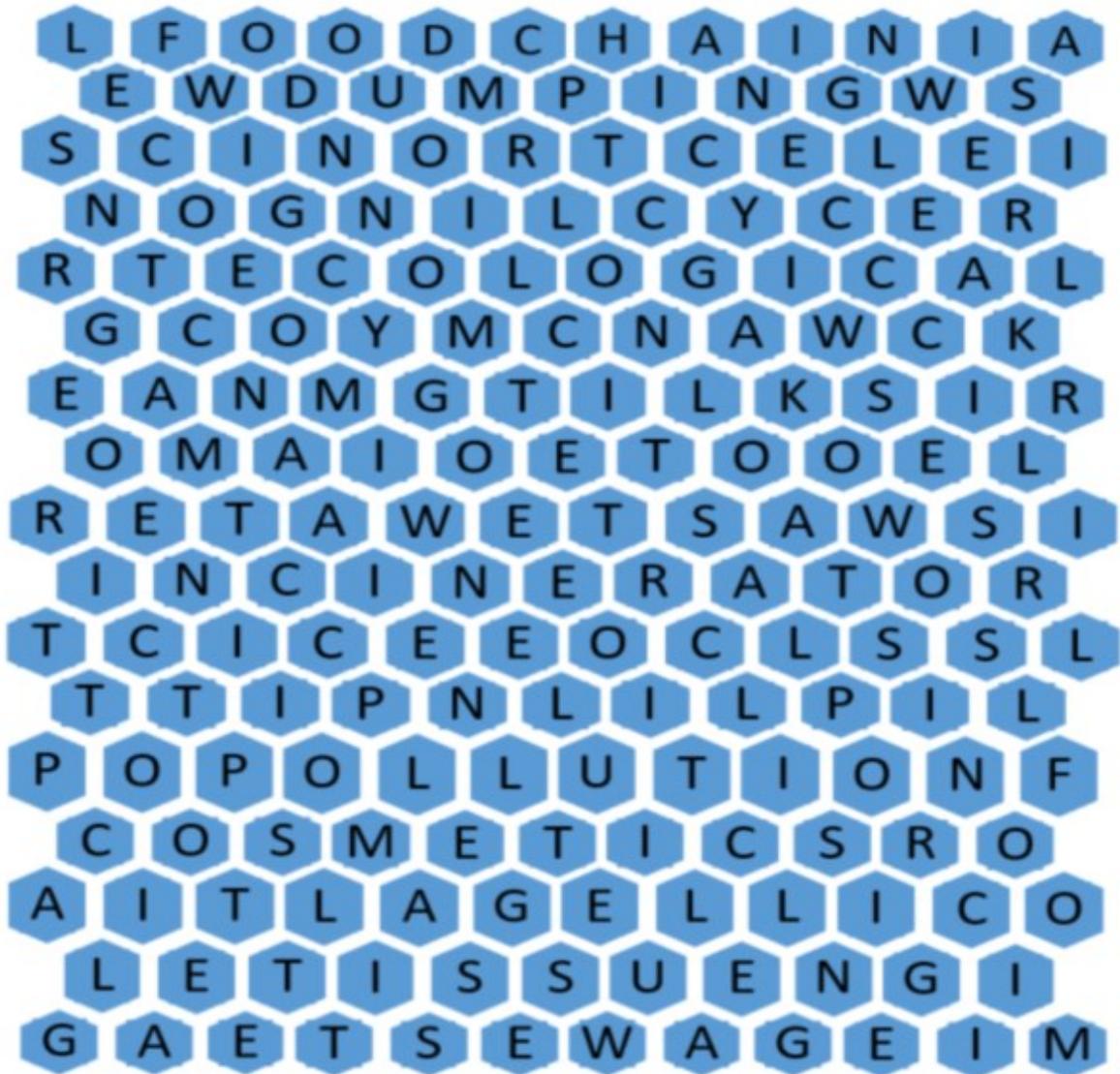


"I myself am trying to decide in which area to specialize in at the master's level, and this experience allowed me to try out different fields in the actual world of work, teaching me what is required from me and for that I am very thankful."

Other members pitched in too, and taught us many things about the different areas of focus within the department. Ms. Tonya Armstrong (Senior Environmental Pollution Officer) guided us through the nuances of the management and disposal of hazardous and solid waste; to the Marine Pollution Control Section and the Water Quality Section taking us on educational trips with them, exposing us to what is required for them to execute their core functions.

We also learned about the impacts of air and noise pollution on human health and the environment. Additionally, Acting Chief Buildings Development Officer, Mr. Andrew Deane and other members of the section imparted knowledge on the importance of the Department's role in regulating built environments and its interconnectivity with the other sections in the department to manage the impacts of human activity, as the actions of humans directly impact the environment. I myself am trying to decide in which area to specialize in at the master's level, and this experience allowed me to try out different fields in the actual world of work, teaching me what is required from me and for that I am very thankful.

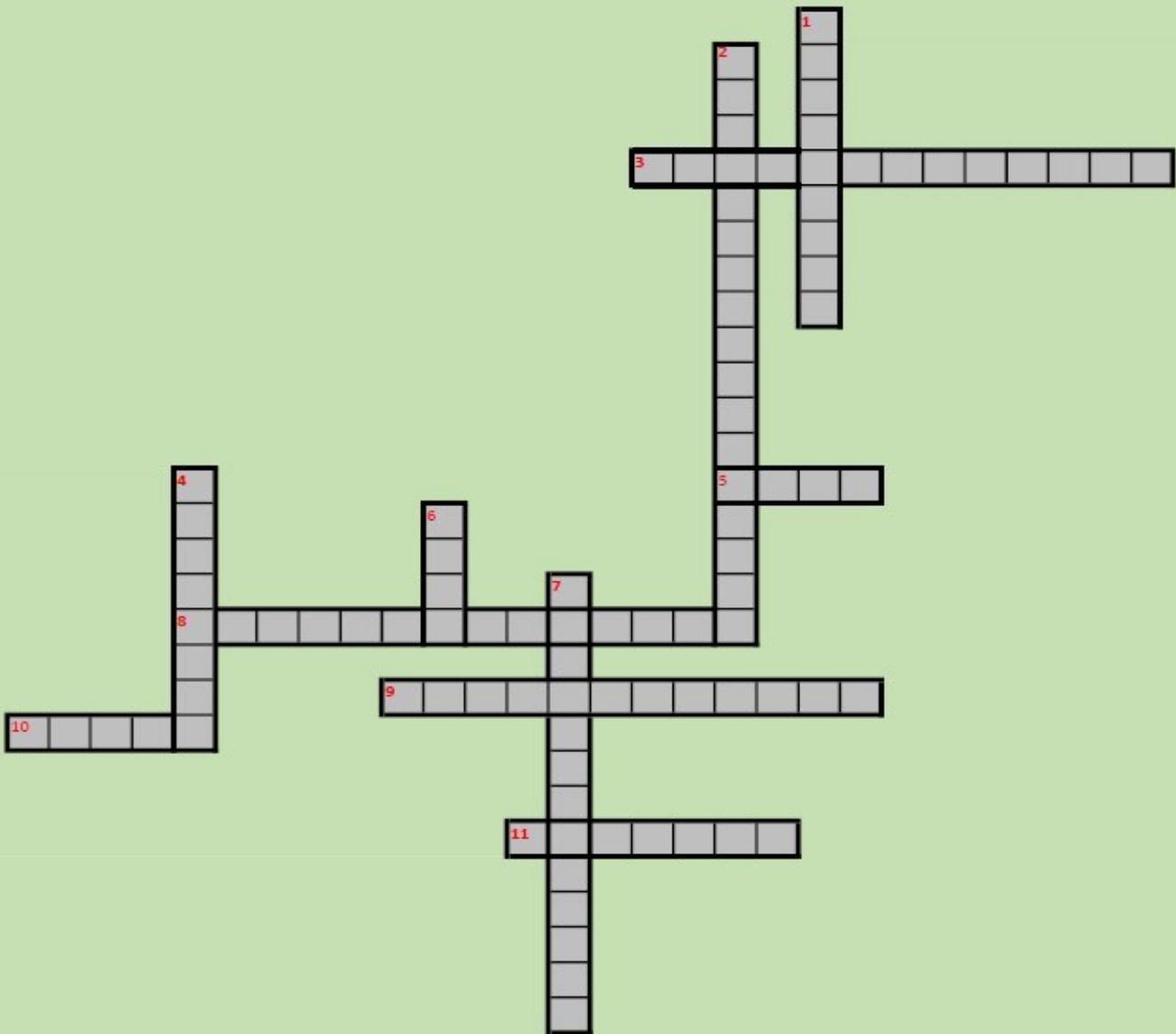
WORD SCRAMBLE- MICROPLASTIC



WORDS

MICROPLASTIC	POLLUTION
WASTEWATER	DUMPING
COSMETICS	RECYCLING
ILLEGAL	INCINERATOR
FOOD CHAIN	TISSUE
SEWAGE	RISK
ECOLOGICAL	
ELECTRONICS	

CROSSWORD TOPIC-MICROPLASTICS



CLUES

ACROSS

- [3] Materials that can be used instead of traditional plastics
- [5] This step can be used to replace non biodegradable plastics
- [8] Microplastics can act as a means of transporting these chemicals in the food chain
- [10] The decade when the plastics boom occurred
- [11] This fabric made from plastic can create microplastics when washed

DOWN

- [1] These "essential" items can contain microplastics
- [2] A possible symptom of excessive exposure to microplastics
- [4] Governmental agencies and NGOs are trying to reduce or eliminate the use of this substance
- [6] These marine and freshwater animals are prone to ingesting microplastics through their feeding activities
- [7] The term used to describe fragments of plastics under 5 mm

Vehicle Maintenance Facilities: A Common Source of Pollution

A common sight across the Barbadian landscape are the road side mechanic or neighbourhood auto-body repair shop, collectively termed Vehicle Maintenance Facilities (VMFs). These are classified as stationary source of pollution, which can negatively impact human health and the environment. The activities occurring at these VMFs can range from scrapping operations, air-conditionings repair, mechanical work, spray-painting and bodywork, valet services and tyre repair.

These operations typically emit particulates (dust) and odours both of which can cause discomfort/annoyance to nearby persons as well as negatively affect human health. In addition, the impacts of noise pollution should not be understated. In Barbados it is quite common for VMFs to be established in neighbourhoods or in close proximity to residences without the necessary permission from the relevant government authorities.

These facilities are typically poorly constructed, have inadequate pollution controls and are not well sealed therefore allowing emissions to the environment. Some operators even operate in the open without any form of enclosure to control the release of pollutants.

The location and lack of or inadequate treatment of emissions from vehicle maintenance facilities are significant factors in the impact that this sector has on the surrounding environment and people. Persons who are affected by emissions from VMFs typically complain of respiratory irritation, nuisance odours, property damage as a result of the operation of these facilities and a reduction in the enjoyment of their property.

Ideally, spray painting and body work activities should be conducted in specially designed booths under negative pressure with pollution controls and industry standard filtration systems designed to provide fresh air for operators and to minimize odours and overspray emissions. Overspray and its subsequent dispersion to the environment is one of the common source of complaints when the activity is conducted in the open or in improperly designed facilities.

Though this article focused on the impacts of VMFs on air pollution. There are other issues associated with VMFs including;



An improperly designed spray-painting booth, operating in a residential area



◇ poor housekeeping practices may result in the harbouring of rodents and other pests and resulting in increased the risk of disease transmission.

Examples of improper storage and poor housekeeping of chemical and waste materials at a VMF.

Vehicle Maintenance Facilities: A Common Source of Pollution Cont'd

- ◇ inadequate storage facilities may result in trip hazards and the leakage/spillage of hazardous chemicals present in the improperly stored items



Example of improper storage of radiators with no observable spill control measures, to capture any waste



- ◇ inadequate solid and liquid waste handling practices, may result in spills that may result in slip hazards and contamination of water and soil

Improper handling of liquid wastes and poor housekeeping such as oil spill can contribute to odours and environmental pollution of groundwater and soil



- ◇ road blockage/ restricted access to the area due to indiscriminate parking of vehicles.

Example of an accumulation of vehicles in a residential area associated with a VMF, which may block roads and other access areas

WORD SCRAMBLE SOLUTION



WORDS

MICROPLASTIC

WASTEWATER

COSMETICS

ILLEGAL

FOOD-CHAIN

SEWAGE

ECOLOGICAL

ELECTRONICS

DUMPING

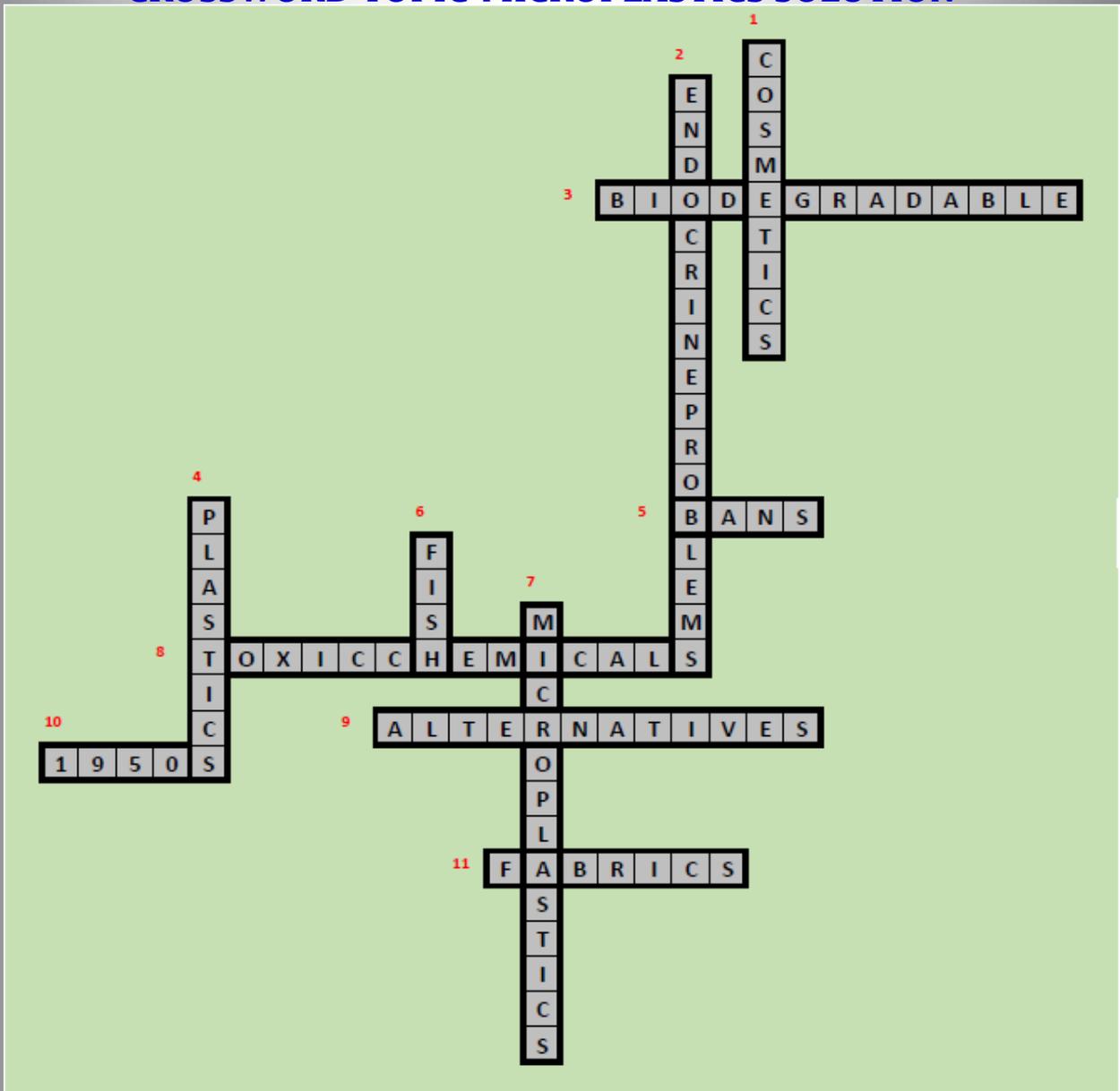
RECYCLING

INCINERATOR

TISSUE

RISK

CROSSWORD TOPIC-MICROPLASTICS SOLUTION



CLUES

ACROSS	DOWN
[3] Materials that can be used instead of traditional plastics	[1] These "essential" items can contain microplastics
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[11] These synthetic materials can create microplastics when washed	[7] The term used to describe fragments of plastics under 5 mm

ROLE OF THE EPD

The Environmental Protection Department (EPD) is a regulatory government agency under the Ministry of Environment and National Beautification. It was established in 1971 and has responsibility for environmental monitoring and control of conditions likely to affect the quality of the land, air, water, and the general health and environmental well-being of the inhabitants of Barbados.

In order to fulfil its functions the EPD has established the following goals:

Goal 1: To understand our environment;

Goal 2: Protect our environment and human health from man-made sources of pollution;

Goal 3: Foster resource efficiency and organization excellence; and

Goal 4: Promote environmental stewardship

Triple Rinse It!

The Environmental Protection Department, as the monitoring, regulating and controlling agency for the Government of Barbados, has a mandate to ensure that activities do not negatively impact on the environment and human health of the populace of Barbados. As part of its mandate, the department is represented on several inter-agency committees and boards to ensure that the impacts to the environment and human health are minimal.

One such board, is the Pesticide Control Board (PCB), of the Ministry of Agriculture. The EPD is represented on this board through the Director, whilst the Senior Environmental Protection Officer for Solid Waste and Hazardous Materials Section represents the Department on the technical Sub-committee of the Board. The EPD reviews and provides comments to the Chairman of the PCB regarding active ingredients in pesticides which are being considered for registration in Barbados. The EPD focusses on the potential impacts that these chemicals may have on the environment and human health and therefore makes recommendations on if they should be registered for use in Barbados.

At present the PCB is involved in the Pesticide Container Management Programme which seeks to raise awareness about the use of pesticides and the management of pesticide containers. The initiative seeks to inform the public about the triple rinse campaign to reduce the hazardous nature of the empty pesticide containers. The slogan for the campaign is Read, Rinse, Return – it seeks to encourage the public to read pesticide and all chemical labels carefully and follow the instructions, it also encourages them to triple rinse when the container is empty and use the rinsate for the intended purpose for which the pesticide was purchased and to return the empty, rinsed bottle to one of the collection centres for recycling. This is a best practice that is encouraged by the EPD for the management of all chemical products, which could benefit the environment by reducing the unintentional release of hazardous chemicals.

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