

CLIMATE CHANGE AND CANCER

Dr. Marisa Nimrod

Chief Executive Officer

The Caribbean Association for Oncology
& Hematology

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INTRODUCTION

Cancer is the second leading cause of death globally after cardiovascular disease.

Climate change has an impact on chronic diseases including cancer.

Environmental exposures that are risk factors include Ultraviolet Rays, Air pollution and environmental toxicants.

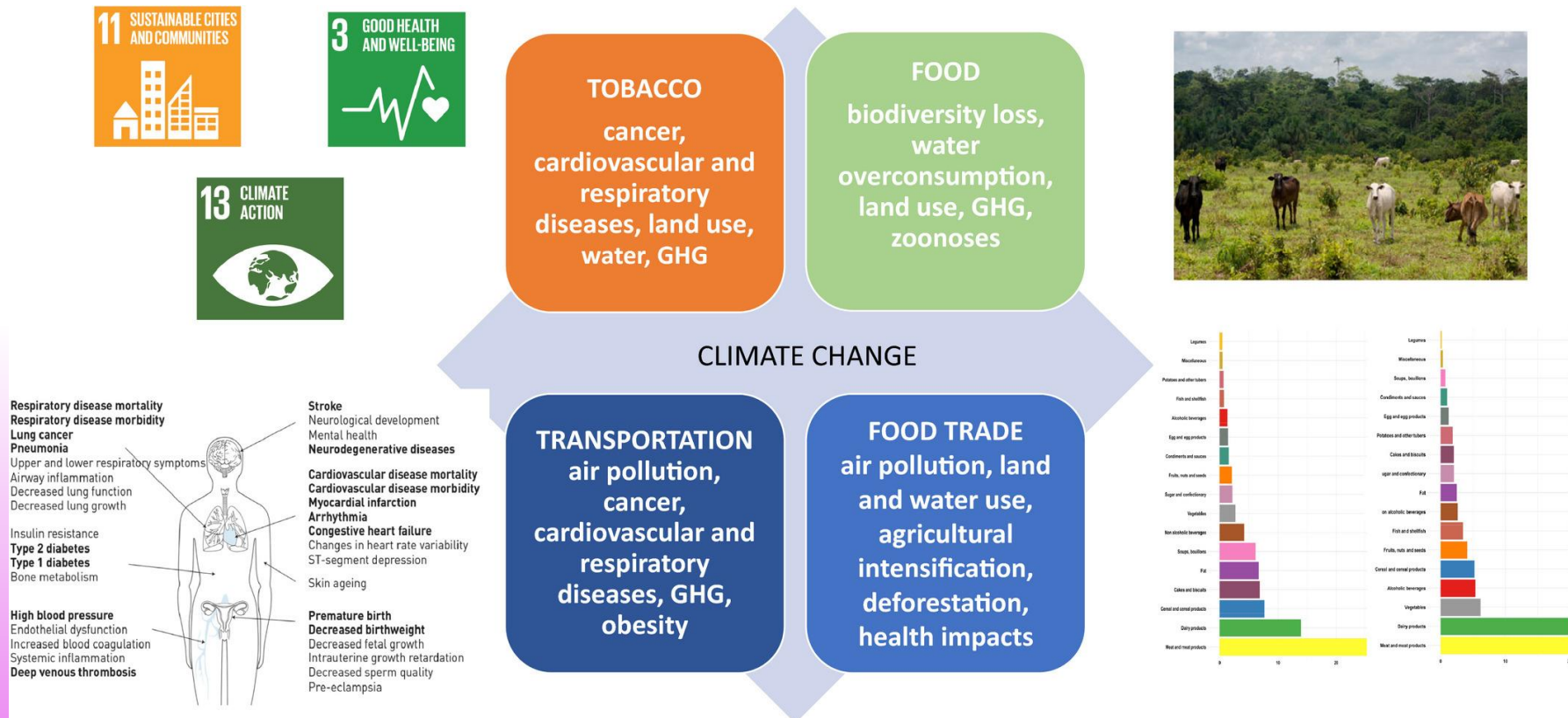


ACTIVITIES IMPACTING THE ENVIRONMENT

PREPARED BY DR. MARISA
NIMROD JAN 2023. 3



ACTIVITIES IMPACTING THE ENVIRONMENT



Source: <https://febs.onlinelibrary.wiley.com/doi/full/10.1002/1878-0261.12781>

CLIMATE CHANGE VARIABLES.

	Heat temperature	Cold temperature	UV	Ambient air pollution	Household air pollution	Wildfire	Food availability	Vegetable and fruit	Milk	Fish	Coffee	Bromide	Cyanotoxins	Physical activity
Mouth				■	■						■			
Oesophagus				■	■			■						
Lung				■	■	■		■						
Stomach				■	■			■						
Liver				■				■		■	■		■	
Colonrectum				■				■	■				■	
Breast				■			■		■					■
Cervix					■									
Bladder												■		
Skin			■											
Thyroid		■		■										
Brain	■			■		■								

Figure 2. Potential associations between climate-change-related risk factors and cancer.
 Source: Yu, P., Xu, R., Yang, Z., Ye, T., Liu, Y., Li, S., ... & Guo, Y. (2022). Cancer and Ongoing Climate Change: Who Are the Most Affected?. *ACS Environmental Au.*



CLIMATE AND SKIN CANCER

CLIMATE AND SKIN CANCER

The loss of the ozone layer due to the production of chlorofluorocarbons (CFC's).

These are released from solvents, spray aerosols, refrigerators, air-conditioners etc.

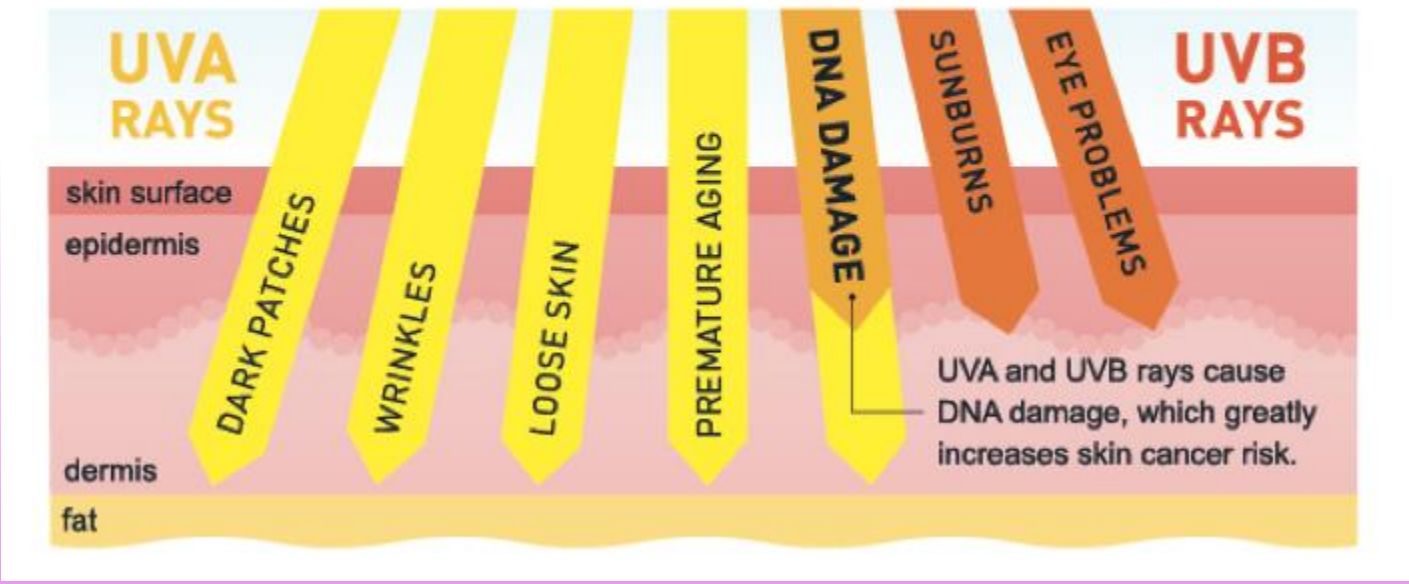
Ozone is a molecule that absorbs all levels of ultraviolet radiation.

The molecules of chlorofluorocarbons in the stratosphere are broken down by ultraviolet radiations and release chlorine atoms. These atoms react with ozone and destroy it.

In particular, the harmful Ultraviolet B (UVB) type rays increase the risk of skin cancer.

RISK FACTOR FOR SKIN CANCER

**MOST SKIN CANCERS ARE CAUSED BY
THE SUN'S UVA AND UVB ULTRAVIOLET (UV) RAYS**



<https://emwaveslifeorharm.wordpress.com/good-vs-bad/>

CLIMATE AND SKIN CANCER

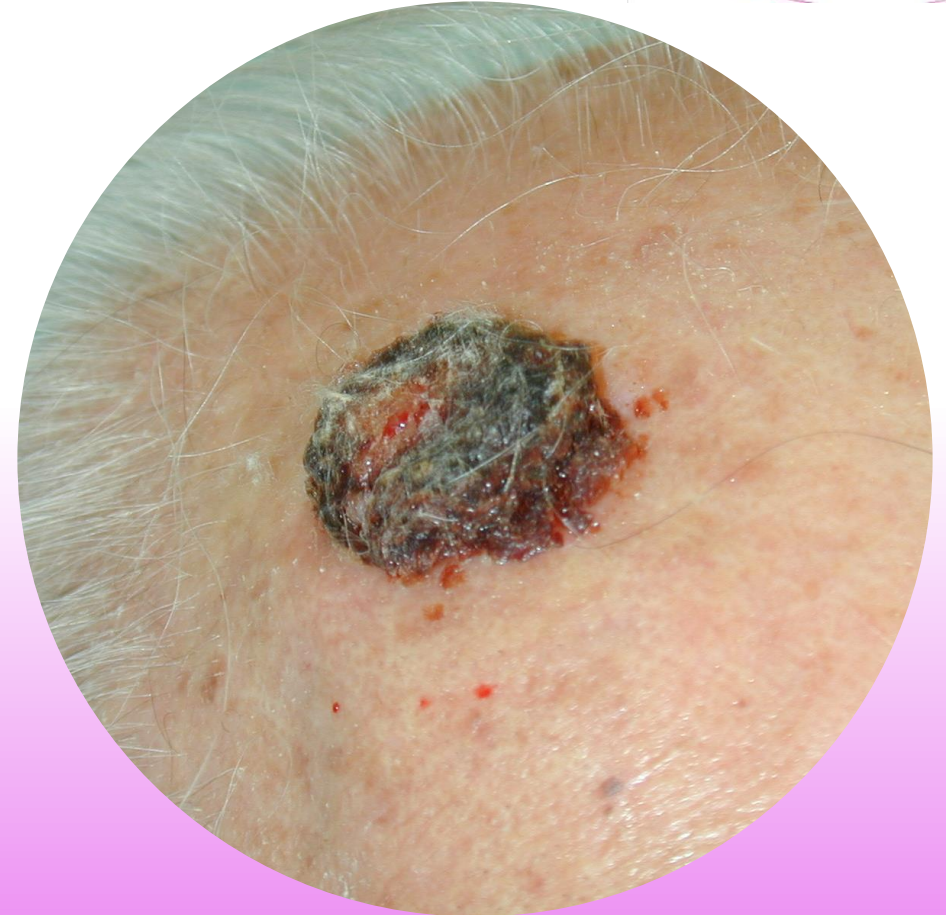
- Basal Cell Carcinoma
- Basal cell carcinoma usually occurs in sun-exposed areas of your body, such as your neck or face.
- Basal cell carcinoma may appear as:
 - A pearly or waxy bump
 - A flat, flesh-colored or brown scar-like lesion
 - A bleeding or scabbing sore that heals and returns.



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CLIMATE AND SKIN CANCER

- Squamous Cell Carcinoma
- Facts & Features
- Second most common human cancer
- Arise on sun exposed skin or lips
- Pink or red growths or bumps
- Locally destructive and can be fatal
- 90% or greater cure rate if caught early



PREVENTION OF OZONE DEPLETION

- Reduce of ozone depleting substances.
- Minimize the use of vehicles that emit carcinogenic substances.
- Car pooling where possible.
- Use of Ecofriendly cleaning products.
- Policies that reduce harmful emissions in industry.



PREVENTION OF SKIN CANCER

Use of protective clothing to prevent excess sun exposure.

Wear long sleeve shirts, long pants, sun hats with broad rims, and sunglasses, when outdoors.

Application of Sunscreen with SPF 15 or higher if UV index is 3 or greater.

Stop smoking.

CLIMATE AND LUNG CANCER

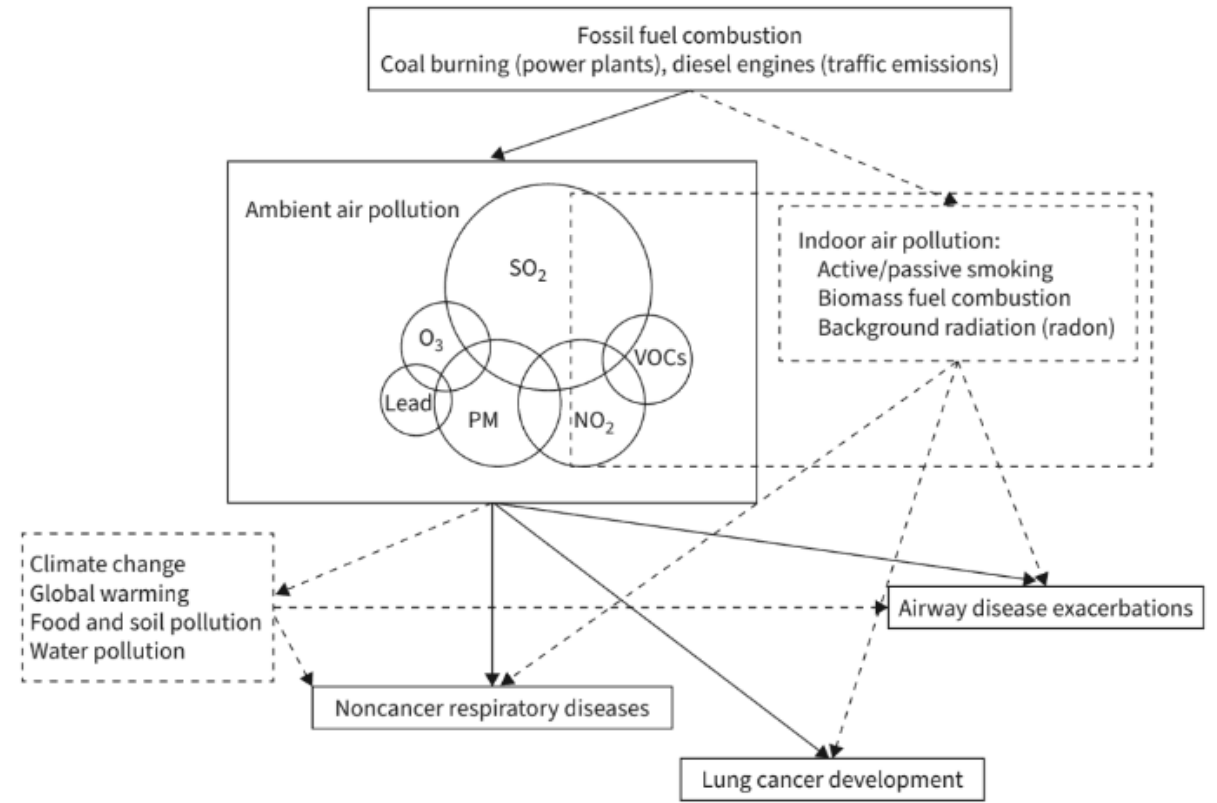


FIGURE 1 The complex interactions between air pollution and climate change, and their impacts on respiratory health and lung cancer. Solid arrows indicate a direct relationship or strong association; dashed arrows indicate a weaker or indirect relationship. SO₂: sulfur dioxide; O₃: ozone; PM: particulate matter; NO₂: nitrogen dioxide; VOCs: volatile organic compounds.

Lam, D. C. L., Nakanishi, Y., & Fukuchi, Y. (2022). Future challenges and their impact on respiratory health and lung cancer. Lung Diseases and Cancer (ERS Monograph). Sheffield, European Respiratory Society, 48-58.

CLIMATE AND LUNG CANCER

Lung Cancer is the leading cause of death in the US and the Caribbean.

Air pollution affects respiratory health resulting in asthma and COPD exacerbations.

Lung Cancer incidence and mortality have been elevated in subjects more heavily exposed to ambient and household air pollution.

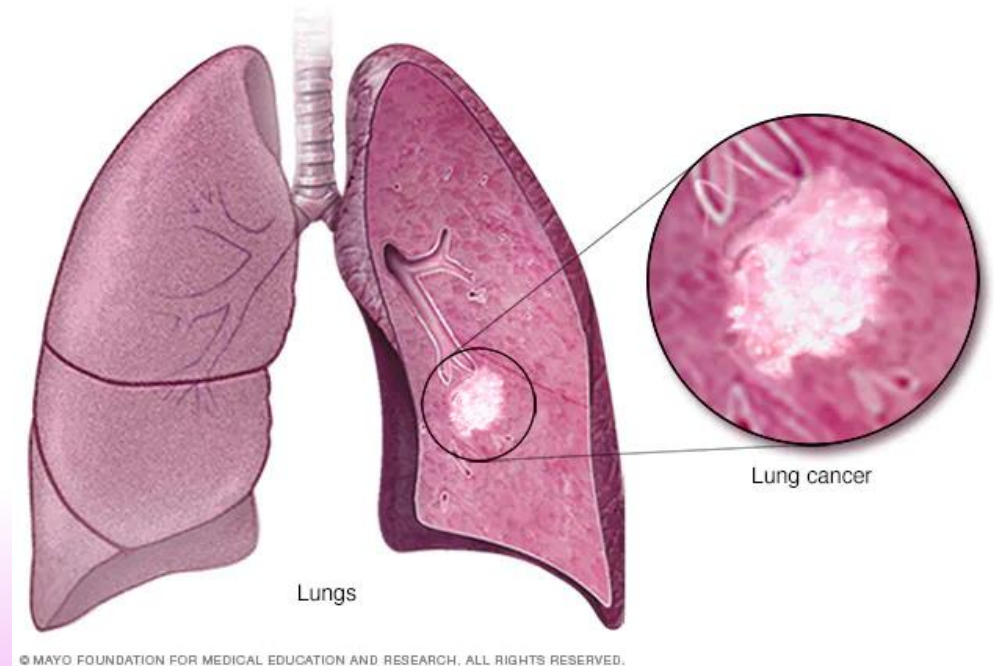
Smoking is the leading cause of lung cancer and a contributor to carcinogenesis.

Exposure to radon gas. Radon is produced by the natural breakdown of uranium in soil, rock and water that eventually becomes part of the air you breathe. Unsafe levels of radon can accumulate in any building, including homes.

Chronic exposure to PM_{2.5} can result in lung cancer development.

LUNG CANCER SYMPTOMS

- A new cough that doesn't go away
- Coughing up blood, even a small amount (Hemoptysis)
- Shortness of breath
- Chest pain
- Hoarseness
- Losing weight without trying
- Bone pain
- Headache



PREVENTION OF LUNG CANCER

TABLE 1 Summary of recommendations to combat the impact of air pollution on respiratory health	
Key recommendations	Examples of practical actions
At personal/public/population level	
Appropriate level of personal protection equipment	Appropriate use of face masks and hand hygiene in relevant risk areas
Life-style modifications	Smoking cessation Healthy diet Regular exercise Indoor ventilation Adoption of an environmentally friendly driving style if needed Adoption of a clean energy approach as far as possible
Keep up to date on latest local air pollution levels	Awareness of and education about the need to fight local pollution
Management of chronic cardiorespiratory diseases	Primary healthcare with regular health checks for cardiorespiratory diseases Early diagnosis and management of chronic respiratory diseases

REDUCE YOUR RISK OF LUNG CANCER AND THE NUMBER OF UK CASES THAT COULD BE PREVENTED



Source: Numbers of cases calculated by CRUK, by applying the estimated population attributable fraction for risk factors (Parkin BJC 2011) to lung cancer cases in the UK in 2011.

LET'S BEAT CANCER SOONER
cruk.org/health



LUNG CANCER PREVENTION



THANK YOU!

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