

WORLD ENVIRONMENT DAY 2019

Air Pollution Monitoring around
Monrovia

Environmental Research and Standards Lab, EPA
5th June 2019

PURPOSE OF EPA'S INVESTIGATION



“Clean Air, Good Health” – we want to provide scientific evidence on air pollution in our communities



EPA already collected some air quality data – thanks to UNPD support EPA now has the ability to collect more data on a wider range of pollutants



EPA is using World Environment Day to launch greater investigation into air pollution to provide evidence for air pollution hotspots.



WHAT DATA DID EPA COLLECT?

PM2.5

Dust, chemical, metal, or dirt particles so small they can pass into your blood stream through your lungs and cause cancer

HCHO

Formaldehyde is an odourless, flammable, strong-smelling chemical that is used in building materials and many household products. It irritates eyes, nose, throat and can cause difficulty breathing

TVOC

Total volatile organic compound refers to any of thousands of organic (carbon-containing) chemicals that are present mostly as gases at room temperature. Links between TVOC and allergies, asthma, and cancer

CO

Carbon Monoxide is a colourless, odourless, tasteless, and toxic air pollutant—is produced in the incomplete combustion of carbon-containing fuels. It reduces the blood's ability to carry oxygen and can cause headaches, slow reactions, and death in extremely high concentrations

CO₂

Carbon dioxide is a contributor to acid rain. Emissions released from fossil fuel-burning combine with moisture in the air to form rain with a high acid content. Acid rain can increase aluminium content in water, killing fish or their food

O₃

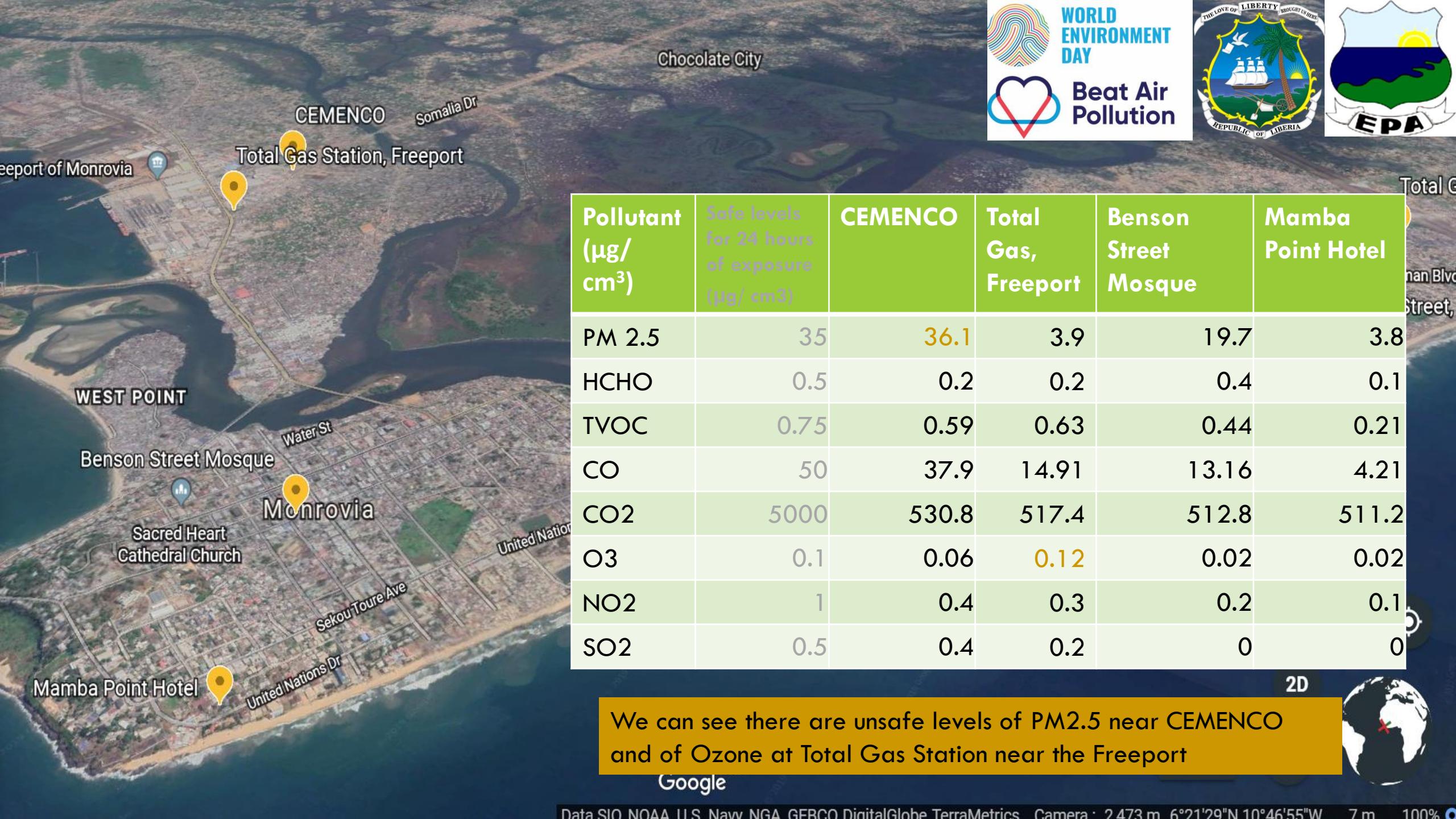
Ozone at ground level, the main component of smog, has negative impacts on human and ecosystem health. It is formed when pollutants from cars, power plants, and industry react with TVOCs in sunlight.

NO₂

Nitrogen oxides are produced from the reaction of nitrogen and oxygen gases during incomplete combustion, and also form smog and acid rain

SO₂

Sulphur dioxide is a colourless gas with pungent suffocating smell. It is produced from burning coal or oil. It can harm the human respiratory system and ecosystems

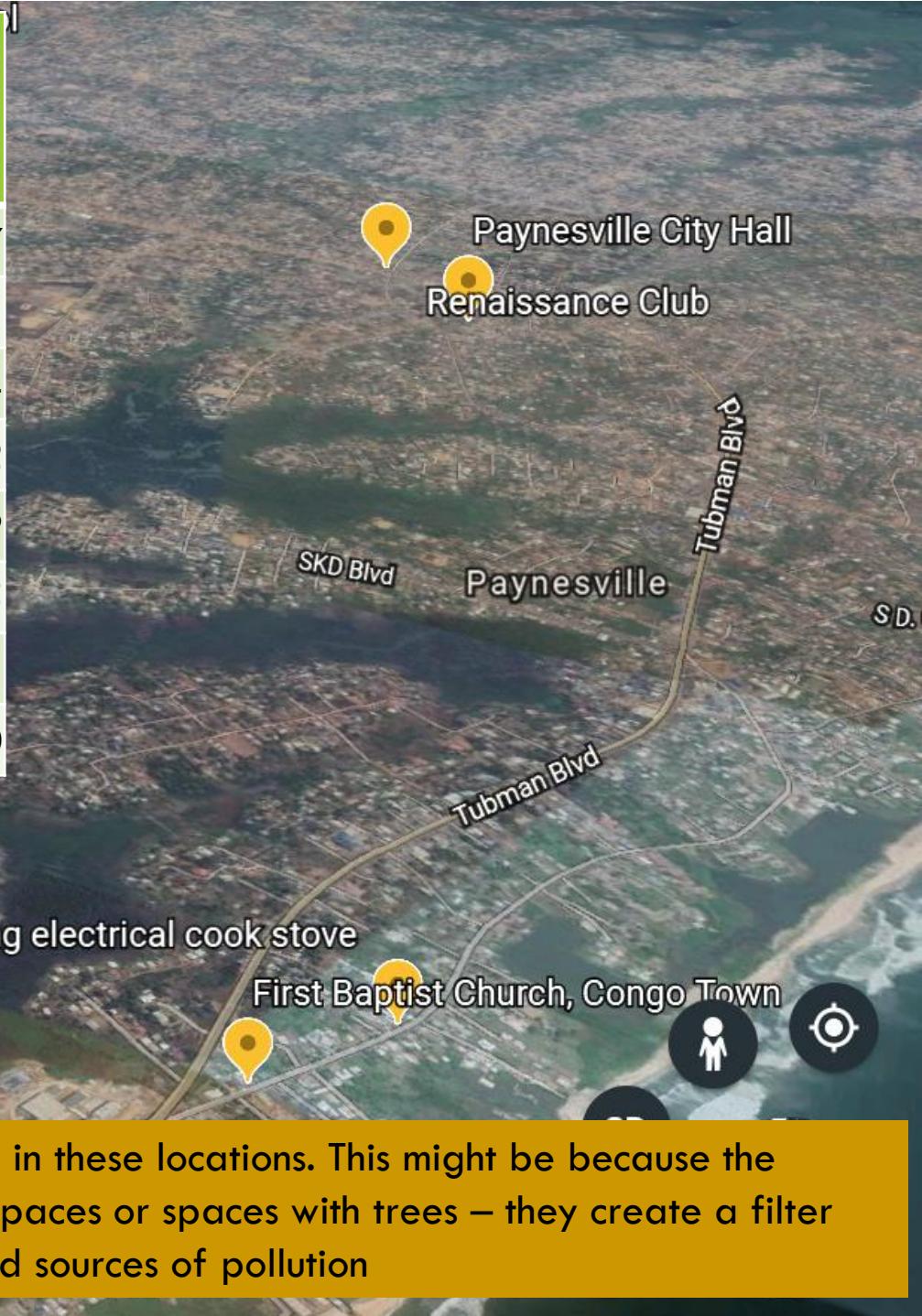


Pollutant ($\mu\text{g}/\text{cm}^3$)	Safe levels for 24 hours of exposure ($\mu\text{g}/\text{cm}^3$)	EPA Generator room	17 th Street	Total, Air Field	Kids Nets School
PM 2.5	35	35.9	37.4	15.3	14.6
HCHO	0.5	0.4	0.3	0.3	0.3
TVOC	0.75	0.77	0.38	0.31	0.23
CO	50	51.8	4.83	7.4	5.73
CO2	5000	519.7	512.5	573.5	512.8
O3	0.1	0.17	0.13	0.09	0.03
NO2	1	0.2	0.3	0.4	0
SO2	0.5	0.5	0.6	0.3	0



We can see that generator rooms are full of unsafe levels of pollutants: particulate matter, total volatile organic compounds, carbon monoxide and ozone all exceed safe levels.

Pollutant ($\mu\text{g}/\text{cm}^3$)	Safe levels for 24 hours of exposure ($\mu\text{g}/\text{cm}^3$)	First Baptist Church	Electric cook stove	Renaissance Club	Paynesville City Hall
PM 2.5	35	13.8	12.5	5.7	4.7
HCHO	0.5	0.3	0.2	0.3	0.1
TVOC	0.75	0.53	0.36	0.42	0.54
CO	50	12.8	12.61	27.9	5.2
CO2	5000	509.4	500.4	539.4	574.9
O3	0.1	0.02	0.04	0.05	0.05
NO2	1	0.3	0.2	0.2	0.1
SO2	0.5	0.1	0	0	0





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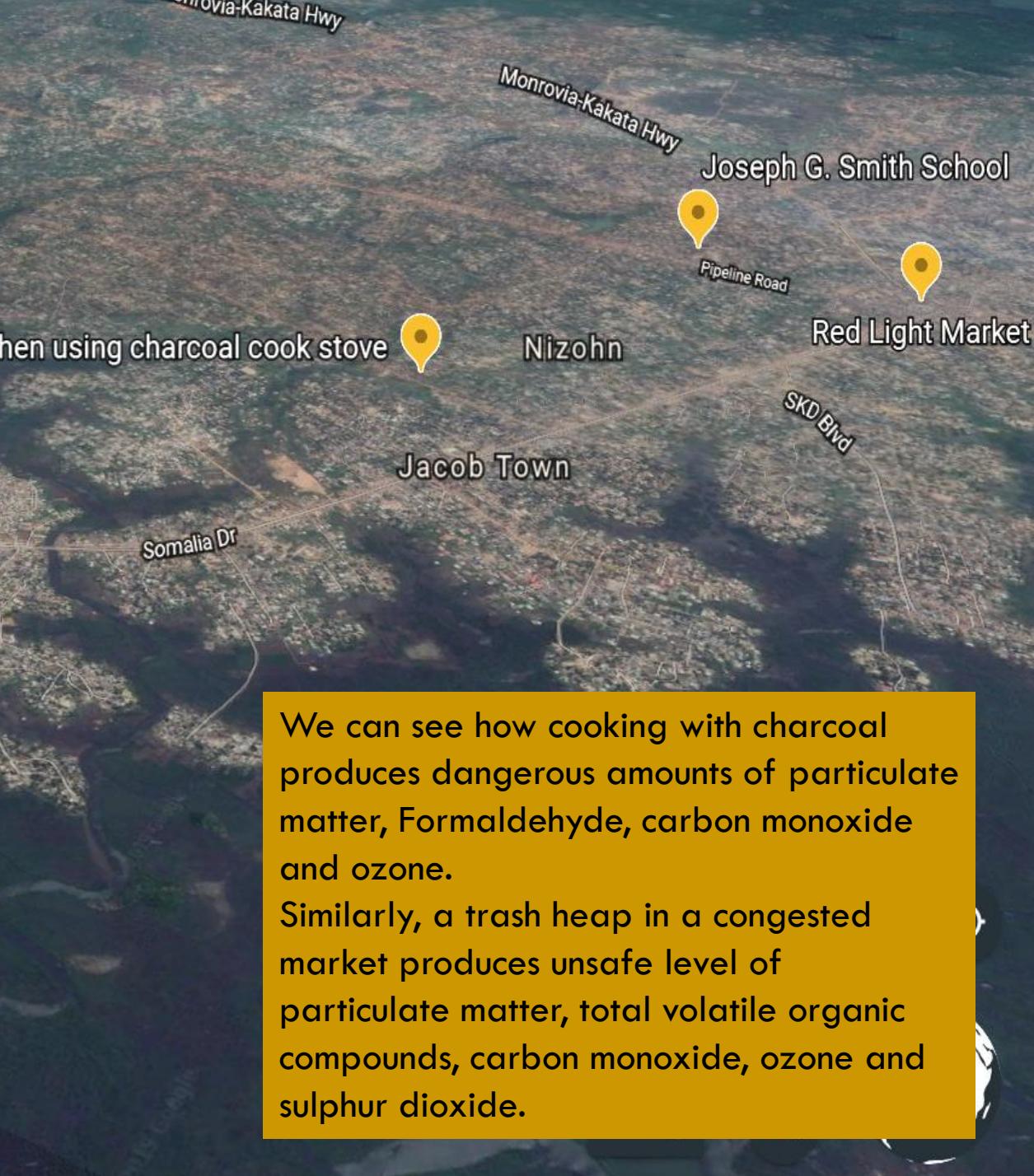
**Beat Air
Pollution**

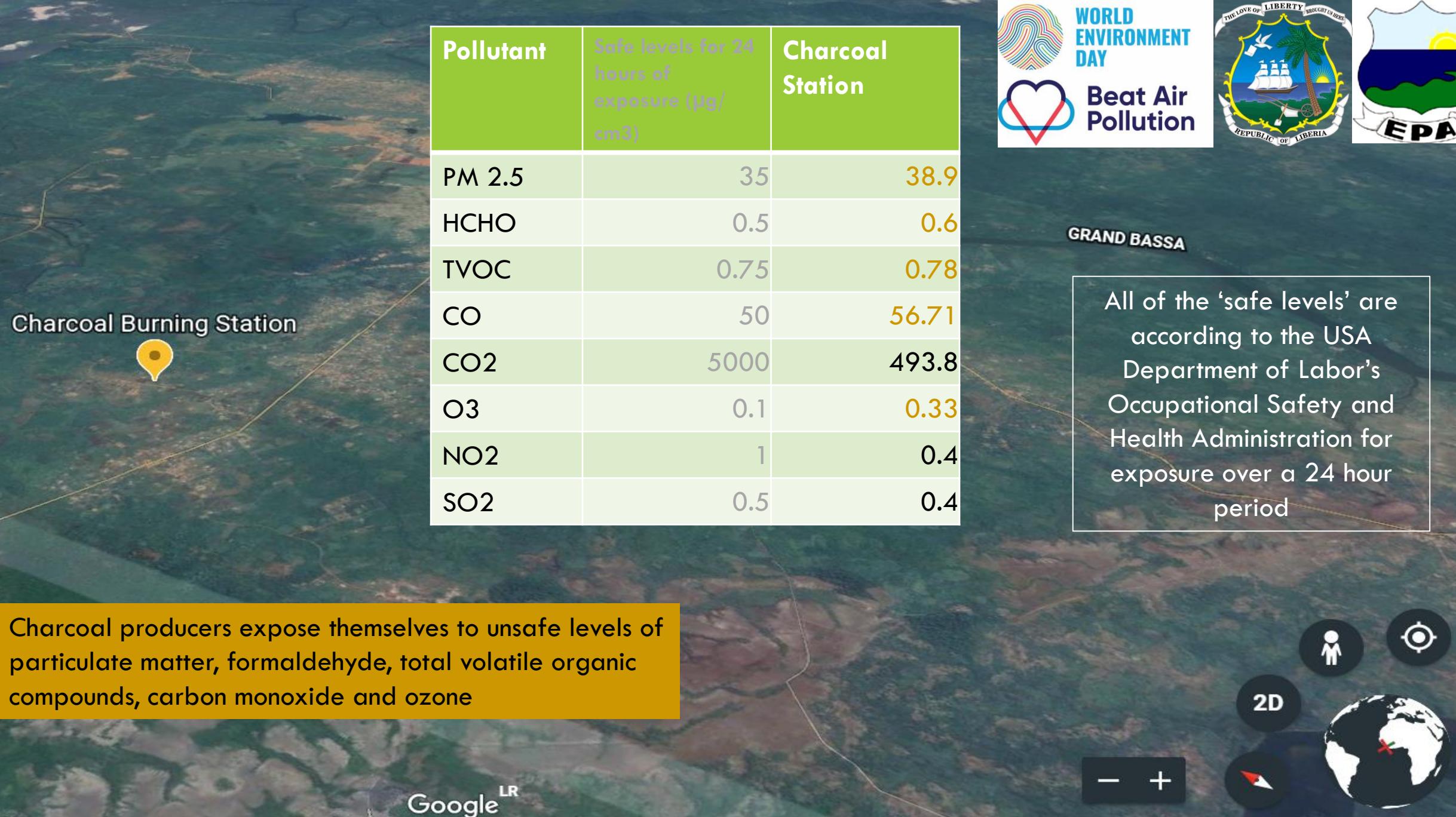


Typical Household Kitchen using charcoal cook stove

Pollutant	Safe levels for 24 hours of exposure ($\mu\text{g}/\text{cm}^3$)	Charcoal cookstove	Redlight Market trash heap	Joseph G. Smith school
PM 2.5	35	36.9	38.4	19.7
HCHO	0.5	0.9	0.5	0.4
TVOC	0.75	0.67	0.81	0.53
CO	50	54.8	51.74	6.19
CO2	5000	512.8	521.9	530.7
O3	0.1	0.21	0.21	0.05
NO2	1	0.3	0.3	0.1
SO2	0.5	0.1	0.7	0

Google^{LR}







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CONCLUSION: DANGER HOTSPOTS

Smoke from charcoal (whether cooking with it or producing it) will expose you to dangerous levels of air pollution which will affect your health

Use a modern clean-burning cookstove or bottled gas

Women cooking are predominantly exposed to this threat – this is unfair

Slow traffic and trash heaps are sources of dangerous pollution

Avoid congested roads and reduce reliance on fossil fuel transport by walking or cycling

Dispose of your trash responsibly by using community based enterprises (CBE) that carry the dirt away

Generator Rooms and the exhaust from generators cause dangerous levels of pollution

Reduce exposure as much as possible

Shift to cleaner current like LEC, Solar or Wind energy sources

Industrial centres generate pollution

Keeping industry away from residential areas can reduce exposure to pollution

Regulating industrial emissions can keep pollution at acceptable levels