

how BLACK CARBON

AFFECTS THE ARCTIC

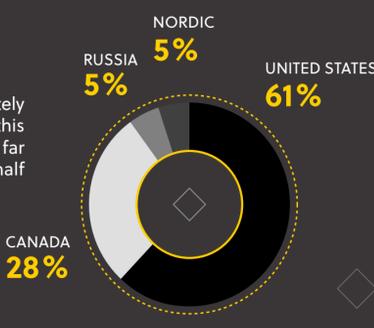
WHAT IS IT?

Black Carbon is formed by the incomplete combustion of fossil fuels, biofuels, and biomass, and released directly into the atmosphere in the form of fine particles. It is the most light-absorbing component of particulate matter. It is a major contributor to global warming, arguably second only to carbon dioxide as the main driver of change.



WHAT ARE ITS SOURCES IN THE ARCTIC?

These countries are responsible for approximately 12% of global black carbon emissions. While this isn't a lot, black carbon does not normally travel far from its source, meaning those emissions carry half of all black carbon impact for the Arctic.



ARCTIC BLACK CARBON EMISSIONS

DIESEL ENGINES



Diesel engines, including on-road vehicles like commercial trucks, off-road vehicles, and trains, can emit black carbon from their combustion cycles.

BLACK CARBON ONLY REMAINS in the ATMOSPHERE FOR A FEW WEEKS

REDUCING BLACK CARBON WOULD IMMEDIATELY REDUCE WARMING in THE ARCTIC



SHIPPING

Combustion of shipping fuel produces high amounts of pollutants, including sulfur dioxide and black carbon. The black carbon from these ships comes from soot, which settles on snow and ice as it journeys across the north.

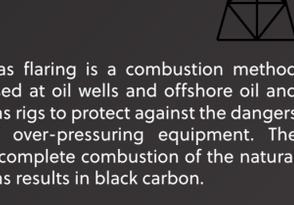


WILDFIRES

The burning of Arctic tundra and boreal forests burns not only the thick organic layer on the surface, but the ancient soil below. The hotter and longer the fires burn, the more of this organic matter becomes black carbon.

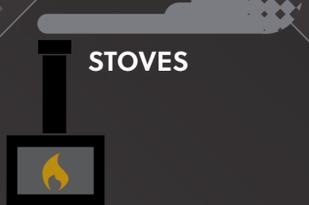
IN 2015 15 MILLION ACRES BURNED in ALASKA and CANADA

GAS FLARING MAY ACCOUNT FOR 42% of BLACK CARBON IN THE ARCTIC



GAS FLARING

Gas flaring is a combustion method used at oil wells and offshore oil and gas rigs to protect against the dangers of over-pressuring equipment. The incomplete combustion of the natural gas results in black carbon.



STOVES

In the Nordic countries, smoke from residential wood-burning stoves constitutes the largest source of total black carbon emissions, exceeding those from transportation sources.

NEW TECHNOLOGY CAN HELP REDUCE BLACK CARBON from WOOD BURNING

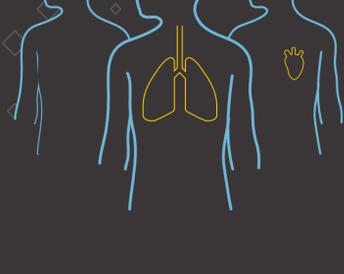
WHY DOES IT MATTER?

IT'S A DUAL-ACTION PROBLEM

Black carbon is often cited as the second most important man-made agent of climate change because it can absorb the sun's energy in clouds and ice, which increases atmospheric heating and ice melt.



IT'S A HUMAN HEALTH CONCERN

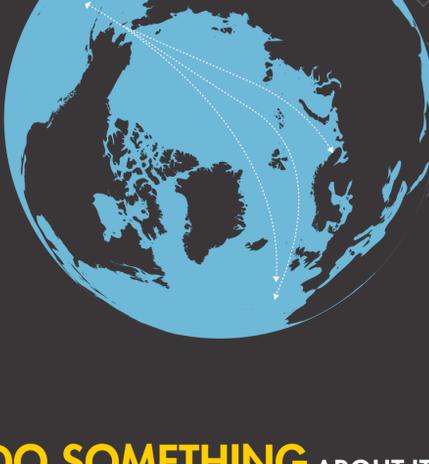


4 million people live in the Arctic. Black carbon can lead to serious health effects like including premature death, heart attacks, and strokes, as well as acute bronchitis and aggravated asthma among children.

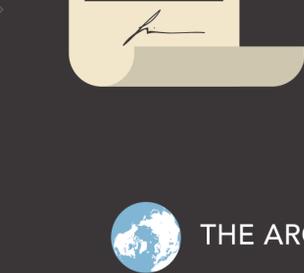
IT'S POISED TO GET WORSE

The opening up of Arctic waters as summer sea ice continues a thirty-year retreat trend holds the opportunity to cut 33% off shipping distances between North-West Europe and the Far East.

SUMMER WATERS in THE ARCTIC MAY BE ICE-FREE by 2050



WE CAN DO SOMETHING ABOUT IT



There is momentum now under the leadership of the United States as Chair of the Arctic Council to enact strong national and regional policies on black carbon emissions.



THE ARCTIC INSTITUTE

Art and Design by Greg Workman