Topic

Topic: Acid Rain

Guiding question

How does acid rain affect different materials?

Research

Dec 27: We write the hypothesis.

Dec 19-25: Research.

Dec 26: Isa ordered Vinegar.

Dec 28: Isa gets the Vinegar.

Jan 6: Akhtar gets pH strips, Limestone, Screws, Wood.

Jan 8: Isa gets concrete, leaves, and glass.

Jan 9: Akhtar works on the slides in class, and Isa comes to Akhtar's house to do the experiment.

Jan 9-16: The 7 days we ran the experiment.

Jan 17: The experiment was completed.

Jan 18: We finished the table and double checked our work, and we submitted it.

Feb 25: We filled out the CYSF.

Source 1

Source 1 : Government Of Canada

Acid rain is a wet deposition. It can damage lakes, rivers, soils, forests, and fish and wildlife populations. More than half of Canada's geology has hard rocks like granite that offer little protection against the corrosiveness of acid rain. The parts of Canada in the Canadian shield are most affected by acid rain but soils in alberta and saskatchewan are also affected by acid deposition

Source 2

Source 2 : Canadian Government pdf

"Acid rain has been called the greatest environmental threat that Canada has ever faced. The rains and snows that were once cleansing and pristine have now become, as a result of human activity, dangerously acidic and destructive."

Acid rain is made from two common byproducts of modern factories, sulphur oxides and nitrogen oxides. When these oxides are in the atmosphere they turn into sulfuric acid and nitric acid.

Acid rain has many negative effects. It can make ponds and lakes too acidic so animals like frogs cannot reproduce, eventually going extinct. It can also increase the acidity of soil which has many negative effects on plants and animals. It also eroded buildings and statues, causing millions of dollars in damage yearly.

Sulfuric acid is a bigger problem and bigger contributor to acid rain than nitric acid. Sulfiric acid is reponible for ⅔ of the acidity in rain while nitric acid is responsible for ⅓.

Source 3

Source 3 : newsletter

Acid rain isn't acidic enough for human skin or clothes to be damaged. Calcite in marble and limestone dissolves in acid rain. When acid rain contacts forest ground it takes away essential nutrients like calcium, which can make trees lose all their leaves, leaving only the bark and branches.

"Are today's environmental problems like acid rain?

Why was the pace of expected reductions so fast by common environmental standards? A continent-wide proposal to slash CO emissions by 30 percent or more, in just a decade, would never have made its way into any early agreement on climate change.

What, then, made acid rain different?

Air pollution – not just acid rain specifically – has very clear domestic impacts. It affects the health of a country's people; the quality of its forests and agricultural land; and the industries that it relies on, such as fishing. While acid rain does not affect human health directly, the emissions that cause it do cause respiratory, heart and a range of other health problems. Cut out these emissions and you not only stop acid rain, but improve a nation's health too.

You might wonder how this nationalistic interest connects to the pan-European or US-Canada agreements that seemed to be successful. Don't be fooled into thinking that countries cut their emissions altruistically, for the sole benefit of their neighbors. Indeed, one of the key arguments that won the US over was Canada's message that 'these impacts are bad on both sides of the border; we are cutting our emissions for you and you should do the same in return'. If there were no impacts of acid rain in the US, it might not have been so successful.

This is not the same for climate change, because the damage will not be felt equally across the world. Richer countries at more temperate latitudes (that is, Europe and North America) will experience fewer negative impacts than poorer countries in the tropics. They are also the biggest contributors to the problem. In other words, the biggest emitters have the fewest incentives to act. If the impacts of climate change would be most severe across Europe and the US, they would be much quicker to find ways to reduce or mitigate them.

Another reason acid rain has been easier to tackle is that the solution was much simpler. It meant sticking a relatively cheap piece of technology on top of an existing coal plant.

Finally, it comes down to timescales. Climate change is a long-term problem. Yes it's already happening today but the worst impacts (and for some countries, the first major impacts) could be decades away. If the problems of air pollution and acid rain were mostly hidden until 2050, countries would not have tackled it so aggressively and so quickly.

If the Statue of Liberty was still the color of copper, old sculptures were still as beautiful as ever, and forests had not been stripped back to nothing, the air across Europe might still be full of sulfur.

Above is a very good point i want to add to our slides but it was too big to summarize so i copy-pasted it

Source 4

Source 4 canadian clean air agreement

The main source of sulphuric acid in North America is coal powered power plants. As of 2020 the emissions of sulfur dioxide have decreased by 78% from the 1990 levels, and the emission of nitrogen dioxide has decreased by 65% from 2000 to 2020. Canada continues to monitor acid deposition.