



1  
00:00:02,190 --> 00:00:05,590

[Music]

2  
00:00:11,749 --> 00:00:09,030

ozone is the earth's natural sunscreen

3  
00:00:14,230 --> 00:00:11,759

it screens ultraviolet radiation if

4  
00:00:15,589 --> 00:00:14,240

there's less ozone more uv radiation

5  
00:00:18,230 --> 00:00:15,599

gets to the earth

6  
00:00:22,150 --> 00:00:18,240

if there's more ozone less uv radiation

7  
00:00:25,269 --> 00:00:23,429

there are a few ingredients to the

8  
00:00:27,589 --> 00:00:25,279

antarctic ozone hole the first

9  
00:00:30,070 --> 00:00:27,599

ingredient is you have to have very high

10  
00:00:31,589 --> 00:00:30,080

levels of chlorine and bromine in fact

11  
00:00:33,430 --> 00:00:31,599

if you made a measurement now you'd find

12  
00:00:35,510 --> 00:00:33,440

that about 80 percent of the chlorine

13  
00:00:40,470 --> 00:00:35,520

over antarctica is from human produced

14

00:00:44,470 --> 00:00:41,910

the second ingredient is you have to

15

00:00:47,670 --> 00:00:44,480

have very cold temperatures over

16

00:00:50,389 --> 00:00:47,680

antarctica about 10 miles up or so it

17

00:00:53,029 --> 00:00:50,399

gets extremely cold and in those cold

18

00:00:54,950 --> 00:00:53,039

conditions you form fairly exotic clouds

19

00:00:57,350 --> 00:00:54,960

what we call polar stratospheric clouds

20

00:00:59,920 --> 00:00:57,360

and you will release this chlorine down

21

00:01:02,470 --> 00:00:59,930

there into a form that can destroy ozone

22

00:01:04,070 --> 00:01:02,480

[Music]

23

00:01:05,910 --> 00:01:04,080

the third ingredient is you need a

24

00:01:08,149 --> 00:01:05,920

little bit of sunlight the sunlight

25

00:01:10,310 --> 00:01:08,159

appears over antarctica in august

26

00:01:12,310 --> 00:01:10,320

september and just that little bit of

27

00:01:14,390 --> 00:01:12,320

light provides the energy to drive

28

00:01:16,070 --> 00:01:14,400

what's called the catalytic reaction in

29

00:01:17,350 --> 00:01:16,080

which one chlorine

30

00:01:20,550 --> 00:01:17,360

molecule

31

00:01:23,830 --> 00:01:20,560

can destroy thousands and thousands of

32

00:01:25,910 --> 00:01:23,840

ozone molecules until finally 100

33

00:01:34,870 --> 00:01:25,920

percent of the ozone in that layer from

34

00:01:38,789 --> 00:01:37,190

there is a question of how will

35

00:01:41,350 --> 00:01:38,799

climate change affect the antarctic

36

00:01:42,950 --> 00:01:41,360

ozone hole and in fact there's some

37

00:01:44,230 --> 00:01:42,960

questions about whether as it gets

38

00:01:46,550 --> 00:01:44,240

colder

39

00:01:48,069 --> 00:01:46,560

you can make the ozone hole last longer

40

00:01:49,590 --> 00:01:48,079

we don't have a good answer for that

41

00:01:51,429 --> 00:01:49,600

right now

42

00:01:53,270 --> 00:01:51,439

so we don't actually know what's going

43

00:01:55,670 --> 00:01:53,280

to happen so that's a real hot research

44

00:01:57,749 --> 00:01:55,680

topic

45

00:01:59,590 --> 00:01:57,759

our current predictions right now

46

00:02:01,990 --> 00:01:59,600

is that the ozone hole will be back to a

47

00:02:04,550 --> 00:02:02,000

level we saw in 1980 in the year of

48

00:02:06,789 --> 00:02:04,560

about 2070. for about the next 10 years

49

00:02:09,990 --> 00:02:06,799

or so we'll see very large ozone holes

50

00:02:11,270 --> 00:02:10,000

and then after about 2017 2018 in there

51

00:02:13,910 --> 00:02:11,280

they'll start getting smaller and