1
00:00:11,830 --> 00:00:09,030
ozone is the earth's natural sunscreen

2
00:00:14,230 --> 00:00:11,840
it screens ultraviolet radiation if

3
00:00:15,589 --> 00:00:14,240
there's less ozone more uv radiation

4
00:00:18,230 --> 00:00:15,599
gets to the earth

5
00:00:22,150 --> 00:00:18,240
if there's more ozone less uv radiation

6
00:00:25,269 --> 00:00:23,429
there are a few ingredients to the

7
00:00:27,189 --> 00:00:25,279
antarctic ozone hole the first

8
00:00:29,750 --> 00:00:27,199
ingredient is you have to have

9
00:00:31,109 --> 00:00:29,760
very high levels of chlorine and bromine

10
00:00:32,950 --> 00:00:31,119
in fact if you made a measurement now

11
00:00:35,110 --> 00:00:32,960
you'd find that about 80 percent of the

12
00:00:37,030 --> 00:00:35,120
chlorine over antarctica is from human

13
00:00:40,470 --> 00:00:37,040

produced compounds chlorofluorocarbons

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
00:01:02,470 --> 00:00:57,360
and you will release this chlorine down

21
00:01:05,910 --> 00:01:04,070
the third ingredient is you need a

22
00:01:08,149 --> 00:01:05,920
little bit of sunlight the sunlight

23
00:01:10,310 --> 00:01:08,159
appears over antarctica in august

24
00:01:12,310 --> 00:01:10,320
september and just that little bit of

25
00:01:14,390 --> 00:01:12,320
light provides the energy to drive

26
00:01:16,070 --> 00:01:14,400
what's called the catalytic reaction in

27
00:01:17,350 --> 00:01:16,080
which one chlorine

28
00:01:20,550 --> 00:01:17,360
molecule

29
00:01:23,510 --> 00:01:20,560
can destroy thousands and thousands of

30
00:01:25,670 --> 00:01:23,520
ozone molecules until finally

31
00:01:34,870 --> 00:01:25,680
100 percent of the ozone in that layer

32
00:01:38,789 --> 00:01:37,190
there is a question of how will

33
00:01:41,350 --> 00:01:38,799
climate change affect the antarctic

34
00:01:42,950 --> 00:01:41,360
ozone hole and in fact there's some

35
00:01:44,230 --> 00:01:42,960
questions about whether as it gets

36
00:01:46,550 --> 00:01:44,240
colder

37
00:01:48,069 --> 00:01:46,560
you can make the ozone hole last longer

38
00:01:49,590 --> 00:01:48,079

we don't have a good answer for that

39
00:01:51,429 --> 00:01:49,600
right now

40
00:01:53,270 --> 00:01:51,439
so we don't actually know what's going

41
00:01:55,670 --> 00:01:53,280
to happen so that's a real hot research

42
00:01:57,749 --> 00:01:55,680
topic

43
00:01:59,590 --> 00:01:57,759
our current predictions right now

44
00:02:01,990 --> 00:01:59,600
is that the ozone hole will be back to a

45
00:02:04,550 --> 00:02:02,000
level we saw in 1980 in the year of

46
00:02:06,789 --> 00:02:04,560
about 2070. for about the next 10 years

47
00:02:09,990 --> 00:02:06,799
or so we'll see very large ozone holes

48
00:02:11,270 --> 00:02:10,000
and then after about 2017 2018 in there

49
00:02:13,990 --> 00:02:11,280
they'll start getting smaller and