1
00:00:00,130 --> 00:00:04,200
Narrator: There’s a new class of chemical compounds

2
00:00:04,220 --> 00:00:08,310
impacting the Earth's ozone layer and raising concerns among some scientists,

3
00:00:08,330 --> 00:00:12,520
but a new NASA analysis indicates

4
00:00:12,540 --> 00:00:16,610
stratospheric ozone could actually be impacted more by

5
00:00:16,630 --> 00:00:20,680
climate change and the continued release of already-banned chemicals.

6
00:00:20,700 --> 00:00:24,810
The Earth’s ozone hole is showing signs of recovery,

7
00:00:24,830 --> 00:00:28,970
decades after the landmark agreement called the Montreal Protocol

8
00:00:28,990 --> 00:00:33,150
that banned many chemical compounds harmful to the ozone layer.

9
00:00:33,170 --> 00:00:37,390
Liang: So we know the Montreal Protocol was a huge success.

10
00:00:37,410 --> 00:00:41,600
This was signed in the late 1980s when scientists and policy makers

11
00:00:41,620 --> 00:00:45,810
from around the world gathered together to try to save the ozone layer.

12
00:00:45,830 --> 00:00:49,930
Strahan: The chemicals they regulated persist in the atmosphere

13
00:00:49,950 --> 00:00:54,120

for many decades, they thinned the ozone layer and created a seasonal hole over Antarctica.

14
00:00:54,140 --> 00:00:58,330
They basically take away part of our planet’s natural sunscreen,

15
00:00:58,350 --> 00:01:02,390
and that increases the risk of skin cancer and damage to plants.

16
00:01:02,410 --> 00:01:06,460
Narrator:Scientists have projected the ozone hole could disappear almost completely

17
00:01:06,480 --> 00:01:10,540
by about 2075, but several factors could delay that recovery.

18
00:01:10,560 --> 00:01:14,750
Liang: There are some industrial compounds that were not banned

19
00:01:14,770 --> 00:01:18,880
by the Montreal Protocol, but as they enter the atmosphere, they will also

20
00:01:18,900 --> 00:01:22,970
hurt the ozone layer.

21
00:01:22,990 --> 00:01:27,110
Strahan: But the unregulated compounds have a short lifespan in the atmosphere

22
00:01:27,130 --> 00:01:31,220
than the chlorofluorocarbons that were originally banned, so they have a short-lived impact on ozone,

23
00:01:31,240 --> 00:01:35,310
and we don’t think they’ll delay recovery by more than a few years.

24
00:01:35,330 --> 00:01:39,560
Liang: We projected by 2050 more than

25
00:01:39,580 --> 00:01:43,770
half of ozone-destroying compounds in the atmosphere will come from

26
00:01:43,790 --> 00:01:47,990
long-lived substances banned by the Protocol.

27
00:01:48,010 --> 00:01:52,130
Narrator:Because these compounds stay in the air for such a long time compared to the

28
00:01:52,150 --> 00:01:56,190
unregulated short-lived compounds, they will have a disproportionate and lingering

29
00:01:56,210 --> 00:02:00,390
impact on ozone, so any non-compliance with the Protocol

30
00:02:00,410 --> 00:02:04,570
can have significant consequences.

31
00:02:04,590 --> 00:02:08,660
Strahan: And the really big uncertainty in ozone-layer recovery is climate change.

32
00:02:08,680 --> 00:02:12,900
There are many naturally produced ozone-depleting substances that are emitted by the oceans,

33
00:02:12,920 --> 00:02:17,150
and as the oceans continue to warm due to climate change,

34
00:02:17,170 --> 00:02:21,360
those emissions will increase, and that will further delay ozone recovery.

35
00:02:21,380 --> 00:02:25,560
Narrator:Scientists want to better understand how climate change will affect ozone recovery.

36
00:02:25,580 --> 00:02:29,680
Liang: This is a hard problem.

37
00:02:29,700 --> 00:02:33,840
As a scientific community we need to work on this major issue.

38
00:02:33,860 --> 00:02:38,040

We now have a powerful new tool to simulate atmosphere and its interaction