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nature

We're with you

Research offers the best exit strategy from this pandemic, and we'll do everything we can to help clinicians and researchers find it.

Like many of you, we're struggling to comprehend the new world we find ourselves in. For decades, we've been publishing research and news about emerging infectious diseases and the potential havoc a pandemic can wreak. Now we are all living it; anxious about what the future holds but also determined to support research and – where we can – to help find a way out.

Compared to what so many are experiencing, the impact on *Nature* has been relatively small, but nonetheless historic. At 3.30 p.m. on Tuesday 17 March, we sent to press the first issue of *Nature* in just over 150 years that had been completed with all our staff working remotely. Some colleagues had less than 24 hours to prepare, as the previous evening our London offices – *Nature*'s headquarters – officially closed, and staff rushed to set up makeshift offices in their homes.

As countries introduce unprecedented measures to stem the spread of the new coronavirus, one of the most alarming conclusions from infectious-disease modelling is that there is no clear exit strategy. We can see from China and South Korea how a combination of community surveillance – testing and contact tracing – strong social distancing and rapid clinical care, reduced infections and deaths. But we don't know how long these measures should last, or whether relaxing them will allow the virus to undergo a resurgence.

In all likelihood, a lasting exit strategy will come from the research that so many of you are involved in. Worldwide, the outbreak has already resulted in the publication of more than 900 English-language papers, preprints and reports (as of 12 March) – and many more when research in other languages is counted. This includes research on virus structure; how it spreads; clinical features of the disease; potential drug targets; the effectiveness of quarantine measures; and the psychological effects on health-care workers. Much more is to come, for example on the virus's impact on economies and on livelihoods, on mental health, environmental protection and global efforts in diversity and inclusion.

It's hard to think of a higher-stakes research project. And this urgent study has to take place in a world where there is no normal. As health-care professionals work to exhaustion so that the sick get immediate relief, researchers, too, are working continuous shifts. This is happening as universities are emptying, investigators are unable to visit their labs, experiments are being cancelled or delayed, and routines shattered. We know that some of you have become ill and that many are simultaneously caring for children, or for partners, elderly relatives or friends.

We're doing two things to help: redoubling our commitment to publishing your research, and providing authoritative, evidence-based reporting and commentary on the outbreak.

PAOLO MIRANDA/AFP VIA GETTY

Exhausted nurses at a hospital in Italy embrace each other.

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To do that, we are committing to the following.

• *Nature* and its publisher Springer Nature – together with other publishers globally – are making coronavirus-related research openly available as quickly as possible. And reporting research and data on preprint servers, for example, will in no way affect consideration of submissions to *Nature*.

• Research published in *Nature,* and in other Nature Research journals, can be accessed through the Nature Research coronavirus research page (go.nature.com/3doznku). In addition, if you're an author on any Springer Nature journal and need support in curating coronavirus-related data, we have set up a support page to help (go.nature.com/2uaf0dh).

• In *Nature*'s 'magazine' sections – our news, commentary and multimedia – we are prioritizing in-depth coverage of the virus and COVID-19 disease. We have introduced a continually updated live blog (go.nature.com/2ulfh3l), and a dedicated section in our daily newsletter, Nature Briefing (go.nature.com/2bhx2ks), which is curating essential coronavirus coverage from around the world. You can also expect more expert commentary and in-depth analysis in our World View and Features sections.

• Our new weekly Coronapod podcast (go.nature.com/39cmzjn) will feature interviews with researchers on the frontlines of the pandemic, those whose work has been affected by the outbreak, and insights from our expert reporters.

• And we'd like to hear how you're doing. Are you studying the coronavirus? Has your research, teaching or funding been affected? How are you feeling and have you found

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ways to cope?

• As we prioritize our pandemic coverage, we will be reducing some of our other content in *Nature*'s magazine section. We understand that you, like us, are still interested in other issues, and we'll continue to cover various important discoveries and developments in the world of research.

• For our authors and reviewers, we're well aware that many of you will have difficulty meeting deadlines associated with our peer-review process. If you are an author or a reviewer, please let us know if you need extra time. Our automated systems will continue to remind you of the original timelines, but we intend to be highly flexible.

• We intend to expedite consideration and review of COVID-19 papers. To help us achieve this, we would like to hear from those of you with relevant expertise who can review over short timescales. If this is something you can do, please write to nature@nature.com, putting 'COVID-19 reviewer' in the subject line.

• Travel restrictions mean that most of our editors and reporters will be unable to meet researchers in face-to-face meetings for the foreseeable future. However, social distancing is not social isolation, and we are doing more to reach out to you in virtual ways.

All these are small steps, and we will be looking for any opportunity – working with you all – to do more, so the world can return to something like normality. This is a big moment for research, and the whole world needs to see results.

Countries must take action on 'hidden' CFC stocks

The international community underestimated ozone-depleting chemicals in old cooling units.

In September 1987, many nations came together in Montreal, Canada, in response to an environmental alarm sounded by researchers. The stratospheric ozone layer, which shields the planet from the Sun's harmful ultraviolet radiation, was disintegrating over Antarctica. The culprit was clear: chlorofluorocarbons (CFCs), a class of chemical used in cooling systems and in products such as spray cans and foam insulation.

That meeting is where the Montreal Protocol on Substances that Deplete the Ozone Layer was adopted – it would be ratified in 1989. CFC emissions fell as countries and corporations rolled out less-damaging chemicals.

Studies[1] confirm that the ozone layer has begun its long recovery. And this has strengthened the Montreal Protocol's reputation as one of the best case studies for science-based policy: researchers identified a looming threat; governments took meaningful action; and the threat began to recede.

> **"The protocol is a shining example of how scientific evidence can drive global action."**

But CFCs didn't just deplete ozone. They have climatic effects, too, as greenhouse gases, and also in that they have changed how air circulates in the Southern Hemisphere – and probably beyond. Now a team led by researchers at the Cooperative Institute for Research in Environmental Sciences in Boulder, Colorado, reports[2] on page 544 how the Montreal Protocol has been helping to pause – or in some cases possibly reverse – the recent changes in atmospheric circulation driven by ozone depletion. Less ozone meant less absorption of incoming solar energy in the stratosphere. This cooled the lower stratosphere, strengthening the upper-atmospheric winds that circulate around Antarctica during austral summer. But as stratospheric-ozone conditions began to improve around the turn of the millennium, the previous change started to stabilize, and might even have begun to reverse, the researchers found.

This study demonstrates the enduring power of the Montreal Protocol – and of international environmental agreements – to protect the global commons. But another study, published in *Nature Communications* last week, reminds us why it is vital for researchers to remain vigilant – and why their work is still needed.

There's no requirement in the Montreal Protocol to find and dispose of older CFC sources – such as old fridges and air-conditioning units – partly because the agreement was about future sources. Also, CFC banks have been regarded as small, but quite how 'small' has been the subject of considerable debate and study. Now, researchers from the Massachusetts Institute of Technology in Cambridge report[3] that two types of CFC (CFC-11 and CFC-12) are leaking out of old cooling equipment and from building insulation – in greater quantities than had been estimated.

The researchers have calculated that these CFC "banks" are so large that they could potentially delay ozone recovery by six years, also adding the equivalent of nine billion tonnes of carbon dioxide to the atmosphere – similar to the amount that the entire European Union has pledged to cut from its emissions under the United Nations Paris climate agreement. The researchers also found higher-than-expected levels of CFC-113, a chemical previously used in solvents whose direct production is banned.

These latest findings follow research from 2018 and 2019 in which China was traced as a source of illegal CFC-11 emissions. China's government has reportedly cracked down on this, and the latest analyses – still preliminary – suggest that these emissions have decreased.

Tracking and disposing of older CFC sources will be essential if the Montreal Protocol is finally to achieve its goals. That will need some degree of action by the protocol's signatory countries – and sooner rather than later. That said, the protocol is a shining example for researchers and policymakers in other domains – not least in climate change – of how scientific evidence can drive global action.

1. Chipperfield, M. P. *et al. Nature* **549**, 211–218 (2017).
2. Banerjee, A., Fyfe, J. C., Polvani, L. M., Waugh, D. & Chang, K.-L. *Nature* **579**, 544–548 (2020).
3. Lickley, M. *et al. Nature Commun.* **11**, 1380 (2020).