

## Update guidance on how coronavirus spreads

**Catching COVID-19 from surfaces is rare. The World Health Organization and national health agencies need to clarify their advice.**

**A** year into the pandemic, the evidence is now clear. The coronavirus SARS-CoV-2 is transmitted predominantly through the air – by people talking and breathing out large droplets and small particles called aerosols. Catching the virus from surfaces – although plausible – seems to be rare (E. Goldman *Lancet Infect. Dis.* **20**, 892–893; 2020).

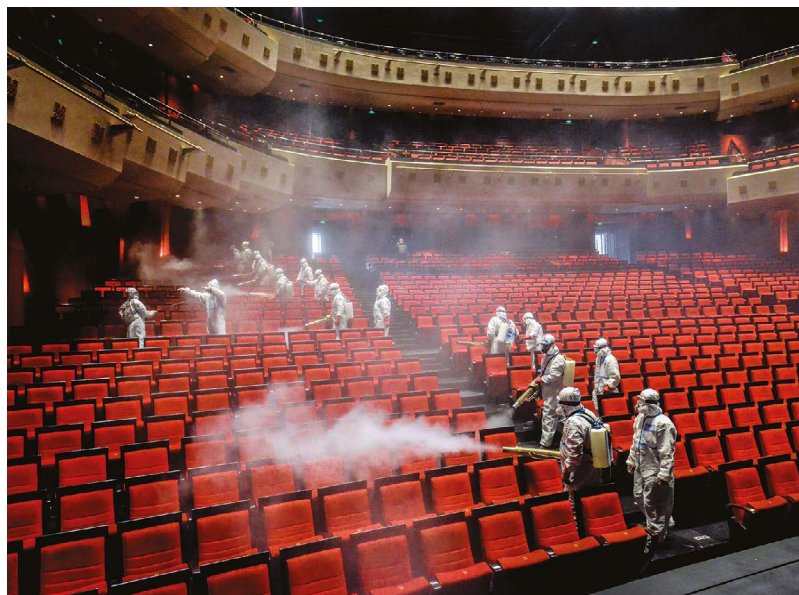
Despite this, some public-health agencies still emphasize that surfaces pose a threat and should be disinfected frequently. The result is a confusing public message when clear guidance is needed on how to prioritize efforts to prevent the virus spreading.

In its most recent public guidance, updated last October, the World Health Organization (WHO) advised: “Avoid touching surfaces, especially in public settings, because someone with COVID-19 could have touched them before. Clean surfaces regularly with standard disinfectants.” A WHO representative told *Nature* in January that there is limited evidence of the coronavirus being passed on through contaminated surfaces known as fomites (see page 26). But they added that fomites are still considered a possible mode of transmission, citing evidence that SARS-CoV-2 RNA has been identified “in the vicinity of people infected with SARS-CoV-2”. And although the United States Centers for Disease Control and Prevention (CDC) says on its website that surface transmission is “not thought to be a common way that COVID-19 spreads”, it also says that “frequent disinfection of surfaces and objects touched by multiple people is important”.

This lack of clarity about the risks of fomites – compared with the much bigger risk posed by transmission through the air – has serious implications. People and organizations continue to prioritize costly disinfection efforts, when they could be putting more resources into emphasizing the importance of masks, and investigating measures to improve ventilation. The latter will be more complex but could make more of a difference.

The New York City Metropolitan Transit Authority alone estimates that its annual COVID-related sanitation costs will be close to US\$380 million between now and 2023. Late last year, the authority asked the US federal government for advice on whether to focus solely on aerosols. It was told to concentrate on fomites, too, and has so far directed more resources towards cleaning surfaces than tackling aerosols.

Now that it is agreed that the virus transmits through



A team disinfecting the Qintai Grand Theatre in Wuhan, China, in January.

**Efforts to prevent spread should focus on improving ventilation or installing rigorously tested air purifiers.”**

the air, in both large and small droplets, efforts to prevent spread should focus on improving ventilation or installing rigorously tested air purifiers. People must also be reminded to wear masks and maintain a safe distance. At the same time, agencies such as the WHO and the CDC need to update their guidance on the basis of current knowledge. Research on the virus and on COVID-19 moves quickly, so public-health agencies have a responsibility to present clear, up-to-date information that provides what people need to keep themselves and others safe.

## Members of Biden’s stellar science team must pull together

**A cast of eminent science advisers has a once-in-a-generation opportunity to bring a cohesive, inclusive approach to science policy.**

**A**s the world faces a pandemic, a climate catastrophe and more, US President Joe Biden is restoring leading scientists, as well as science-policy and science-diplomacy specialists, to positions of responsibility and influence. The world’s scientific community is hugely relieved to see this recommitment to scientific integrity in the US government after four years of neglect, dismissal, denial, suppression and political interference.

Biden’s actions are necessary, but researchers must

calibrate their expectations. From the COVID-19 pandemic to climate change, to the survival of democracy, the challenges facing the United States and the world are vast. For Biden and Vice-President Kamala Harris to succeed in the endeavour to integrate evidence-based policies across the entirety of the federal government, the administration's key players will need to carefully coordinate their efforts. They will also need to work as a unit, and present a united front should members of the Republican party begin any campaigns of misinformation and disinformation.

It's a relief to see so much expertise back in government. Biden tapped Eric Lander, a mathematician and genomics pioneer, to be his presidential science adviser and director of the Office of Science and Technology Policy (OSTP). This is the highest-ranking scientific position in the US government. It is notable that, for the first time in US history, the head of the OSTP will sit in the cabinet alongside holders of influential ministerial portfolios such as the secretary of state and the treasury secretary.

In another first, Alondra Nelson, a respected scholar of science and technology studies, becomes the OSTP's inaugural deputy director for science and society. Other strong appointments include infectious-diseases specialist Rochelle Walensky as the head of the Centers for Disease Control and Prevention, and veteran environmental regulator Michael Regan to lead the Environmental Protection Agency (EPA). The top two climate appointments, Gina McCarthy and John Kerry, are equally seasoned hands. McCarthy is a former head of the EPA, and Kerry is a former secretary of state and one of the architects of the 2015 Paris climate agreement. They join the Biden administration in new roles, coordinating US national and international climate policy, respectively. Kerry will also sit in the cabinet.

### Joined-up government

The administration has hit the ground running. A revamped coronavirus plan, announced on 21 January, includes the goals of increasing testing, speeding up vaccine roll-out and achieving greater health equity (see page 18). Last week, Biden also announced an urgent and sweeping review of the scientific-integrity practices of US agencies over the past decade, and ordered agencies to appoint – or reappoint – chief scientific and scientific-integrity officers. The review needs to evaluate, precisely and systematically, how the former administration suppressed data and distorted, politicized and interfered with research findings. The task at hand is not only to restore science to government, but also to work out how to protect it, as much as is possible, from a future administration intent on following the Trump administration's handbook.

Biden has committed to a raft of measures that put climate at the centre of US domestic and international policy, including freezing oil and gas exploration offshore and on public land, and doubling offshore wind-energy capacity by 2030. He has rejoined the Paris climate accord and announced plans to host a summit of heads of state and government on Earth Day, on 22 April. The climate team will know that the international community has lost valuable years in the effort to address climate change, and

that, globally, trust in the US administration is low. The speed with which Biden has acted is impressive, but, as with the broader science agenda, the climate team must work quickly to build in safeguards so that this administration's achievements cannot be easily erased by a future president.

Biden's plans also include long-overdue proposals to provide more climate finance to low-income countries, and more-targeted support to underserved communities in the United States. This is in addition to what Biden calls a 'whole-of-government' approach to racial equity, and his pledges to address systemic racism in employment, health care, housing and justice.

This agenda, and the review of scientific integrity – and how it has suffered during the past four years – will benefit from Biden's inspirational appointment of Nelson. Nelson was president of the Social Science Research Council and studies the intersections of race, science, medicine and society. Her most recent book is *The Social Life of DNA: Race, Reparations, and Reconciliation after the Genome* (2016).

Nelson's appointment set social media abuzz, because it recognizes the importance of the field of science and technology studies at this juncture. The promise of this discipline lies in its potential to enable the administration to join up its ambitious efforts in scientific, social, racial and environmental justice. If this administration truly seeks to understand how to better protect science in government from political interference, and if it genuinely wants to address systemic racism and historical inequities in funding and health care, then it will need to act on the perspective that Nelson brings, along with that of communities that are too often excluded from science. Biden needs to ensure that these perspectives sit at the centre of his administration's decisions, not on the periphery.

Putting science, as well as climate, racial and social justice at the heart of national decisions is something that few – if any – of the world's governments have tried. And, to further complicate matters, many political memoirs and biographies show how ideological differences and competitive behaviour within governments can lead to discord. Incoming administrations include individuals with great ambition for their cause, and some will do whatever it takes to achieve it, even if that means undermining their colleagues in the process.

Members of the Biden–Harris team have just one chance to succeed, and they have a responsibility to their nation and the world. They must not squander this opportunity. Of course, there will be differences of opinion, but these need to be aired constructively to ensure a positive outcome. A willingness to listen and learn will be crucial, and those in the most senior roles, in particular, must lead by example.

The president has raised expectations. He has an extraordinarily ambitious agenda to elevate science, protect some of the most vulnerable groups, bring the pandemic to heel and tackle dangerous climate change. Every one of his senior staff members needs to ensure that they are working towards the administration's shared goals. Biden has assembled a formidable team. But, on their own, talented individuals won't be enough to achieve his agenda; they must all pull together if they are to really succeed.

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