

News in focus



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At the start of his administration, US President Joe Biden promised that he and his team would lead with science and truth.

HAS BIDEN FOLLOWED THE SCIENCE? WHAT RESEARCHERS SAY

As the US president's first year in office ends, *Nature* assesses whether he's kept his promise to make evidence-based decisions.

By Jeff Tollefson, Max Kozlov,
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On the road to becoming US president in January 2021, Joe Biden promised to “listen to the science”. Many researchers *Nature* spoke to say he has mostly made good on that pledge: the White House is no longer questioning the threat of COVID-19 and global warming, as it did during the administration of his predecessor, Donald Trump. But as Biden's first year comes to a close, researchers also say that just

because the president has embraced science, it doesn't mean his administration has always acted swiftly or sensibly on it.

“They're saying the right things, and calling on programmes to do the right things on a whole range of issues,” says Andrew Rosenberg, who heads the Center for Science and Democracy at the Union of Concerned Scientists, an advocacy group based in Cambridge, Massachusetts. “But there's an awful lot of work to do.”

Biden has scored highly with researchers by elevating his science adviser, geneticist Eric

Lander, to the White House's inner circle – the cabinet – and by quickly moving to reverse many of the most stringent anti-science policies implemented by Trump. But frustrations are also mounting over how much the administration has been able to accomplish: its pandemic response has been hindered by vaccine hesitancy, misinformation and widespread mistrust of government. And its ambitious climate agenda has stalled because of political opposition in Congress.

Biden is operating in a difficult political environment, with scepticism for government

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institutions at an all-time high, says Susan Hyde, a political scientist at the University of California, Berkeley. Simply appointing the right people to the right positions won't solve the problem, she adds. "How do you restore trust once a bureaucracy has been politicized? That's an uphill battle for anybody."

Safeguarding integrity

Biden aimed early in his administration to distinguish his science policy from Trump's. For instance, just one week after his inauguration, Biden released a memorandum on "restoring trust in government through scientific integrity and evidence-based policymaking". But it took months longer than expected to accomplish one of the most basic aims of that memorandum – to get a task force to review scientific-integrity policies across the government and recommend how they might be strengthened to guard against political interference.

On 11 January 2022, the task force finally released the report. It analysed some of the most egregious breaches of scientific integrity during the Trump administration, at agencies such as the National Oceanic and Atmospheric Administration, and concluded that the US government needs to standardize its policies across agencies and hold to account those found to have violated the rules. It also recommends creating an interagency council on scientific integrity that could help to investigate violations.

But critics say that it does not go far enough. "While this report does a good job of setting the stage, there is also a lot more that needs to be done to actually guarantee protections for federal science," says Lauren Kurtz, executive director of the Climate Science Legal Defense Fund in New York City. For instance, there are no details on what sort of consequences might be appropriate for those found to have violated scientific integrity. The White House's Office of Science and Technology Policy, which led the report, says that it will be working to help implement the recommendations in the coming months.

On the lookout

Science watchdogs will be tracking how the White House handles this and a range of other issues, including environmental justice, nuclear weapons and thorny questions about foreign interference in US research. They'll also be monitoring efforts to re-staff government agencies that lost thousands of scientists during the Trump administration. So far, those efforts have been remarkably successful at US agencies including the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA), according to an analysis by the Union of Concerned Scientists. But other agencies, such as the Environmental Protection Agency (EPA),



CDC director Rochelle Walensky has come under fire over communication issues.

which shed more than 700 scientists under Trump, have struggled to make up lost ground.

Biden's promises to restore trust in government and listen to scientists were welcome goals in January 2021, when a wave of COVID-19 infections was hitting the United States hard. The year before, Trump had contradicted recommendations made by public-health researchers at the CDC, and his administration sidelined that agency and meddled with its scientific reports.

Researchers are no longer being obstructed at the CDC, says Sam Groseclose, a former associate director of science at the agency, who retired in December 2018. "They are encouraged to use science, so that's a much better environment," he says.

"They're saying the right things. But there's an awful lot of work to do."

Still, some researchers say that in its decision-making, the CDC is neglecting what researchers have learnt from the social sciences and implementation science, which studies how health interventions are best applied in communities. For example, the agency committed a blunder in May by recommending that vaccinated people no longer needed to wear masks in public places, says Helen Chu, an infectious-disease specialist at the University of Washington in Seattle. The advice was sound at the time, if you considered virology data in a vacuum, Chu says, but it "didn't incorporate what we know about human behaviour". As

many researchers predicted would happen, unvaccinated people also stopped wearing masks indoors, and COVID-19 cases rose before the CDC reversed its decision in late July.

Many researchers also say that the CDC has muddled the distinction between science and policy. Data can help officials to formulate policies, but policies are often based on other factors, too, such as keeping children at school and businesses running, says Kenneth Bernard, an epidemiologist and a top biodefence adviser to former presidents Bill Clinton and George W. Bush. At times, he says, CDC director Rochelle Walensky has failed to make this distinction clear to the public, which undermines trust.

A prime example of this is the CDC's guidance last month that people who test positive for COVID-19 need to isolate for only five days – down from ten – if they don't have ongoing symptoms. Initially, the CDC suggested that the recommendation was based on evidence about when the virus is most transmissible. But in the following days, Walensky clarified that the choice was based on what the agency felt people would "tolerate", and on a need to keep the country running in the face of an unprecedented surge in COVID-19 infections. "If she had said this clearly at the start, and stated that it was a trade-off of risks, people might have appreciated that," says Angela Rasmussen, a virologist at the University of Saskatchewan in Saskatoon, Canada.

Former CDC director Tom Frieden agrees, suggesting that Biden might be almost too eager to show that he is not censoring science, by allowing the CDC to act independently. The White House and the various agencies

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should not interfere with public-health science, Frieden says, but they should help to shape policies and should communicate them in a clear and unified way to avoid a flurry of confusion.

The CDC did not respond to a request for comment from *Nature*. But in an interview with *The Wall Street Journal*, Walensky said she is being coached by a media consultant who will help her to communicate CDC policy more clearly.

Highs and lows for the FDA

After the Trump years, Biden also hoped to bring some normality back to the beleaguered FDA, which scientists had derided in 2020 after its controversial emergency authorizations of hydroxychloroquine and convalescent plasma as COVID-19 treatments. For the most part, Biden has returned things to how they were before, says Peter Lurie, president of the Center for Science in the Public Interest in Washington DC. Since Biden took office, the agency's transparent review of antiviral drugs for emergency use and its continued vigilance in monitoring for side effects from COVID-19 vaccines have served as a model for what regulatory agencies should do in the face of a global pandemic, Lurie says.

Still, the FDA could do more to combat misinformation about vaccines and other products within its purview, says Joshua Sharfstein, a vice-dean at the Johns Hopkins Bloomberg School of Public Health in Baltimore, Maryland. A deluge of misinformation about COVID-19 shots has contributed to a situation in which one-third of people in the United States have not been fully vaccinated. The FDA has been stuck in an "old way of communicating", says Sharfstein, who served as the agency's principal deputy commissioner during former president Barack Obama's administration. It typically communicates with the public only when it is making a formal announcement, he says, and "that's a lost opportunity".

Erica Jefferson, the associate commissioner for external affairs at the FDA, responds that despite the agency's efforts, "there continues to be an army of people, both in the United States and abroad, that have continued to aggressively push misinformation that is inflicting significant harm".

Environmental protections

When it comes to the environment, Biden pledged not only to advance an ambitious climate agenda, but also to rebuild the embattled EPA, which Trump took aim at early in his presidency. One of the first decisions by Biden's EPA administrator, Michael Regan, was to disband and reconstitute the agency's main scientific advisory board, which had been stacked with industry-friendly scientists under the previous administration.

It was an unprecedented move to start from scratch, says Chris Zarba, who managed that advisory board before retiring in 2018 and joining the Environmental Protection Network, an advocacy group created by former EPA employees. "They just went in and did what needed to be done."

The administration has also been busy on the rules and regulations front. For example, Regan reversed a controversial 'secret science' rule put in place under Trump that would have prevented the agency from considering non-public data when crafting regulations. Health data, such as information collected when studying the impact of air pollution on people, is often protected for privacy reasons. Many scientists say that the rule would have worked in industrial polluters' favour.

But much remains to be done, particularly when it comes to climate. Although the administration has announced regulations targeting cars and methane emissions, the EPA has yet to address the impact of power plants, which could be crucial to meeting Biden's climate goals. The EPA did not immediately respond

to *Nature's* request for comment.

Trump had pulled the United States out of the 2015 Paris climate agreement; Biden signed an order on 19 February to bring the country back in. But meeting Biden's domestic climate goals – including a pledge to limit US greenhouse-gas emissions to 50% of 2005 levels by 2030 – has proved more difficult. The Democrats' flagship climate legislation – a roughly US\$2-trillion spending bill that includes hundreds of billions in proposed climate investments – is currently languishing in the US Senate. And environmentalists lamented the hypocrisy of the Biden administration authorizing oil and gas leases in the Gulf of Mexico.

As with creating pandemic policies at the CDC, many scientists and observers acknowledge that there is a difference between heeding climate science and crafting climate policies, which are subject to broader considerations and political pressures. "I do see the administration following the science," Menon says, "but when it comes to actual implementation, it might just take a little bit more time."

WHAT CHARLES LIEBER'S CONVICTION MEANS FOR SCIENCE

After Harvard chemist's trial, scientists report ripple effects for federal funding and research itself.

By Andrew Silver

This week marks two years since Harvard University chemist and nanotechnology pioneer Charles Lieber was arrested on allegations of lying to US federal authorities about his financial ties to China. Last month, a jury convicted him of making false statements, as well as related tax offences. Researchers say that the high-profile US criminal case is already having an impact on the scientific community. It marks the second time an academic researcher has been tried on accusations of hiding ties to China since the US Department of Justice (DoJ) launched its controversial 'China Initiative' to root out threats to national security.

"I think it makes clear to academic researchers the importance of fully and honestly disclosing the research funding they're getting from sources to federal agencies when they're applying for awards," says Tobin Smith, vice-president for science policy and global affairs at the Association of American Universities in Washington DC, of which Harvard

– in Cambridge, Massachusetts – is a member. "Transparency is critical to ensuring the integrity of scientific research."

Lieber, whom Harvard placed on paid leave after his arrest, was principal investigator of a research team that received more than US\$15 million in federal grants from agencies including the US Department of Defense (DoD) and the National Institutes of Health (NIH) between 2008 and 2019. During the trial, prosecutors asserted that he had lied to or misled the DoD and the NIH about his participation in a Chinese government programme called the Thousand Talents Plan, intended to attract researchers from overseas. The prosecutors said that as part of Lieber's Thousand Talents contract, the Wuhan University of Technology agreed to pay the scientist a salary of up to \$50,000 per month, plus living expenses and funds for starting up a laboratory. They asserted that he didn't report income from the Wuhan University of Technology or disclose a bank account in China to the US Internal Revenue Service.

Ultimately, a federal jury found Lieber guilty