

C1 is Space Disaster

Trump's going to Mars

Greenfieldboyce 25 [Nell Greenfieldboyce, NPR science correspondent & Masters of Arts degree in science writing, 2-12-2025, Is Trump the president who will truly set a course for Mars?, NPR, <https://www.npr.org/2025/02/13/nx-s1-5294575/president-trump-elon-musk-mars-moon>, Willie T.]

Back in 1969, Robert Zubrin remembers watching the first moon landing when he was a teenager. He says if someone back then had asked him to predict when astronauts would walk on Mars, "my guess would have been the early 1980's." "And, in fact, NASA had plans to do that at that time, which were aborted by the Nixon administration," says Zubrin, an aerospace engineer who is president of the Mars Society and author of *The Case for Mars*. Over the decades, as administrations have come and gone, presidents have repeatedly promised future missions to Mars, holding this up as a key goal for human space exploration. Never before, though, has a president had such a close relationship with a would-be Mars colonizer, one who has transformed the world of rocketry. Elon Musk, President Trump's ally who is shaking up government agencies, founded the company SpaceX with the goal of making humans a multiplanetary species. In addition to ferrying astronauts to orbit for NASA, this company is currently building and test flying a new space vehicle, Starship, that's designed to transport massive amounts of cargo—including people—and land on Mars. "This is quite a singular moment for the prospects of getting to Mars," says Zubrin, who sees this as a time filled with both opportunity and peril. "I think it actually is pretty clear right now that we're going to get a humans-to-Mars program started," he says. But to succeed, any such plan would need broad political support, and he worries about Mars suddenly becoming a divisive, partisan issue. "This is not going to work," says Zubrin, "if this is understood to be an Elon Musk hobbyhorse." The presidents and Mars In his inaugural address in January, President Trump got the attention of the space community when he said the United States would "pursue our manifest destiny into the stars, launching American astronauts to plant the Stars and Stripes on the planet Mars." In some ways, a president inspirationally referring to Mars is nothing new. Back in 1989, for example, President George H. W. Bush called for a return to the moon, to be followed by "a journey into tomorrow, a journey to another planet: a manned mission to Mars." He envisioned footprints in the Martian dirt by 2019, the 50th anniversary of the moon landing. "Within a few short years after President Bush's Kennedy-esque announcement, however, the initiative had faded into history," one policy analyst wrote. A decade and a half later, President George W. Bush refocused NASA on a return to the moon by 2020, adding that "with the experience and knowledge gained on the moon, we will then be ready to take the next steps of space exploration: human missions to Mars and to worlds beyond." President Obama told NASA to forgo the moon, but did maintain Mars as a goal: "By the mid-2030s, I believe we can send humans to orbit Mars and return them safely to Earth," he said in a speech at NASA's Kennedy Space Center. "And a landing on Mars will follow." First, the moon? During President Trump's first administration, he issued a space policy directive that refocused NASA on a human moon landing, with missions to Mars added as a future goal. That program, called Artemis, is what NASA has pursued ever since. It continued under President Biden, although it's been criticized as relying on a super-expensive rocket that rarely flies. Despite delays and cost overruns, NASA says it is poised to send humans to orbit the moon next year. A landing is planned for the year after that. Trump's reference to Mars, but not the moon, in his inaugural speech had some in the space community wondering if this was a result of Musk's influence. The new Trump administration could kill Artemis and its lunar plans, but Casey Dreier, chief of space policy for the Planetary Society, says that would be "strange in the historical sweep of things" given that the first Trump administration basically created this program "There's a lot of good reasons to still go to the moon, one of which is that the U.S. has made a commitment to not just its allies, but to the broader commercial space and business community here in the country," notes Dreier. Still, he thinks that the current administration might challenge NASA to really nail down how the space agency will move from lunar exploration to a Mars mission. More difficult than the moon NASA has a "Moon to Mars Program Office," notes Dreier. He thinks, however, "there's no 'to Mars' part of it. It's all 'to moon.'" He says NASA has constrained budgets, and there's always been concerns that the agency hasn't had enough resources to pursue both the moon and Mars. "It's hard to express verbally, I think, how much harder Mars is than the moon and how different it is," says Dreier. A trip to the moon takes just three days. Going to Mars, in

contrast, takes months—one way. Recently, a NASA program aimed at retrieving pristine rocks from the surface of Mars and bringing them back to Earth ran into real trouble, as costs ballooned by billions and the mission timeline slipped. One decision the Trump administration will have to make is whether, and how, to pursue this science mission. Dreier says in terms of human exploration, NASA needs to lay out how its lunar activities will actually help get the agency closer to going to Mars. "That is the key reframing that could help the long-term exploration program be more efficient and effective," he says. President Trump's pick to lead NASA is Jared Isaacman, a private astronaut who flew to orbit twice in SpaceX vehicles and completed the first commercial extravehicular activity, or spacewalk. He has yet to be confirmed. A NASA spokesperson told NPR in an email that the agency is "looking forward to hearing more about the Trump Administration's plans for our agency and expanding exploration for the benefit of all, including sending American astronauts on the first human mission to the Red Planet." A non-partisan planet Because of the way the planets align, potential launch windows to Mars open up in 2026 and 2028. Musk has publicly stated that he's aiming to send Starship to Mars as soon as next year. Starship has yet to reach orbit, but Zubrin thinks it's possible that an uncrewed Starship might land on Mars by 2028.

Nuclear is key but investment is needed.

Nguyen 20 [Tien Nguyen, Ph.D. in Organic Chemistry & B.S in Chemistry with Minor in Physics, 5-15-2020, Why NASA thinks nuclear reactors could supply power for human colonies in space, Chemical & Engineering News, <https://cen.acs.org/energy/nuclear-power/NASA-thinks-nuclear-reactors-supply/98/i19>, Willie T.]
brackets in original

The astronauts pass their days in darkness. After several months of living on the moon, they're still adjusting to the endless night. The crew's habitat at the lunar south pole sits in a shadowed crater—chosen for its promise of ice—that has not been touched by a single ray of sun for billions of years. Fortunately, the nearby nuclear reactor is unfazed by the lack of light. Connected to the astronauts' base camp by a kilometer of cables cautiously tracing the lunar surface, the reactor provides an uninterrupted supply of electricity for recharging rovers, running scientific instruments, and most importantly, powering the air and heating systems that keep the astronauts alive. This is one vision of what human exploration could look like on the moon. In fact, NASA has plans to make some versions of this scene a reality—and soon. The agency aims to send a human mission to the moon by 2024 in an effort named the Artemis project. Congress has allocated more than \$6 billion of NASA's 2020 fiscal budget for space exploration programs including the Space Launch System rocket, the Orion spacecraft, exploration ground systems, and research and development. The agency estimates that it will cost \$35 billion to land a crew on the lunar surface, including the first woman to step foot on the moon. After 2024, NASA hopes to move to launching one human mission each year and reach sustainable operations on the moon by 2028. The lessons learned in that phase will be crucial in preparing for future trips to Mars. One major effort will involve figuring out which power systems—including ones that have never been tested on the lunar surface, such as nuclear power—would best support future settlements. Whether the necessary materials can be brought safely to the moon and whether systems such as nuclear fission can run reliably under such harsh conditions are central questions that must be answered as engineers weigh their options. Going nuclear Choosing a power source depends on the particular mission's needs, says Michelle A. Rucker, an engineer at NASA's Lyndon B. Johnson Space Center who has researched possible architectures for space settlements. Electricity may come from nuclear reactors, solar panels, batteries, fuel cells, or some combination of these technologies connected in a power grid, she says. "I'm a big fan of all the types of power." But each power source has distinct pros and cons to consider. Solar arrays have reliably delivered renewable power in space for decades but are useless in places that never get any light, like the potentially resource-rich craters on the moon. And on the windy, dusty surface of Mars, solar panels may struggle to collect enough light, making them a risky option for powering life support systems, Rucker says. Batteries and fuel cells have limited lifetimes for now, relegating them to

supplementary power sources at best. One type of nuclear device that has been used to power spacecraft is a radioisotope thermoelectric generator, which runs on the heat produced by the decay of plutonium-238. These generators have been used since the 1960s in Mars rovers and space probes sent to the outer edges of the solar system, such as the Voyager spacecraft and Cassini. Despite being the workhorses of scientific missions, the generators provide only several hundred watts of power, just enough to send radio signals back to Earth or power a camera. On Earth, the nuclear technology used by power plants is nuclear fission, which splits uranium-235 atoms via bombardment with neutrons to generate heat that's captured to produce electricity. **Nuclear** fission holds the potential to **provide a continuous, reliable source of power for a small space settlement designed to last for several years.** In the 1960s, many scientists thought fission reactors for space would follow on the heels of radioisotope generators. In 1965, the US launched a small nuclear fission-powered satellite named SNAP-10A, but electrical issues caused it to fail a mere 43 days after launch; it's still in orbit, now just another piece of space junk. The Soviet Union launched 31 nuclear fission-powered satellites over the next 2 decades. But the development of new nuclear fission reactors for space stalled during that time because of design problems and ballooning budgets. Engineers wanted advanced performance from these systems right away, which led to complicated and expensive designs, says David Poston, a nuclear engineer at Los Alamos National Laboratory. He and Patrick McClure, who specializes in reactor safety at Los Alamos, have worked at the lab for the past 25 years and recall the days when nuclear fission had fallen out of favor. "Pat and I were sitting around just kind of demoralized," Poston says, "because we had gotten to the point where NASA wasn't really interested anymore because the impression was that it was going to be too expensive and too hard to develop a fission reactor." But the pair were convinced their team could come up with a design to dispel the funk that had settled around fission power for space. In the early 2010s, they got their chance: researchers at Los Alamos and later the NASA Glenn Research Center and the US Department of Energy began work on a joint project called Kilopower, now renamed the Nuclear Fission Power Project. The goal is to develop a new nuclear fission power system for space that would be capable of producing 10 kW of electrical energy. Designing the reactor **Four** of these **reactors** could **easily provide the** 40 kW of **power** that Rucker estimates a six-member crew would need **to live on Mars. The** team's modular, compact **design is lightweight enough for space exploration, in which every kilogram counts.** Previous hypothetical fission-power concepts required a payload of 12–14 metric tons (a 6–7 t reactor plus a backup), whereas a single Kilopower reactor would weigh an estimated 1.5 t, she says. The team decided to approach the reactor design anew, putting one priority above all: simplicity. This meant not only maintaining a simple mechanical design but also looking for opportunities to simplify safety approvals and project management. As an example, McClure says, the team made a conscious choice to limit the size of the nuclear core to a container already being used to test nuclear materials instead of fabricating a new one. "I hate to call it an innovation because it's not that complicated.

Testing nuclear-carrying spacecraft sparks nuclear accidents and global prolif

Feldscher 19 [Jacqueline Feldscher, "Push for nuclear power in space sets off proliferation debate", 09/27/2019, POLITICO,

<https://www.politico.com/story/2019/09/27/nuclear-power-nasa-mars-alan-kuperman-q-and-a-1510896> //ZL

This appeared to be NASA heading in a direction that is contrary to longstanding U.S. policy ... so it seemed like a good time to convene the stakeholders, including NASA, Congress, and the companies seeking to build these types of reactors but using low enriched uranium. MOST READ cbo-budget-69850.jpg Bessent flew to Florida to lobby Trump on tariff message John Roberts lifts midnight deadline for US to bring back man who was wrongly deported to El Salvador 'How Ugly Is This Going to Be?' 'The opposite of what Americans voted for': Market turmoil causes Trump backlash Supreme Court, in a win for Trump, lets admin cancel \$65M in teaching grants What do you hope to achieve? **We want to look at ... what are the potential risks of using this type of fuel in a space reactor. Those risks include ... a launch failure.** That would send the thing up but **it would come down in somebody else's country. What would be coming down is** 40 kilograms of highly-enriched **uranium, which is enough for several nuclear weapons.** ... About **20 percent of launches have failures.** ... The government is well aware of the risk. I believe, but I can't be sure, that it's the reason President Trump's presidential

memorandum last month said any launch with highly-enriched uranium would require presidential approval before the launch. Another risk of highly-enriched uranium is the security costs for NASA would go through the roof. A study from a few years ago says extra costs would be \$40 million per launch and a one-time infrastructure update at the launch site of \$30 million, so the first launch would cost \$70 million extra for security. The third risk is that **this would create a precedent for other countries**. They might say, “**The U.S. now thinks it’s ok to use highly-enriched uranium, so we’re going to enrich uranium to weapons grade**.” Maybe they are really using it for a [power-generating] reactor, or maybe **they’ll divert it for a bomb**. The fourth big concern is that the commercial reactor builders are not licensed to handle highly-enriched uranium, so that means they could not partner with NASA to develop less expensive reactors. This would be a government program and, as we know from conventional launch, that can be on the order of 10 times more expensive than what commercial sector could do. The last risk ... is there’s a lot of opposition in Congress and in nonprofit groups to any further use of highly-enriched uranium. So if NASA wants to use highly-enriched uranium for this space reactor, it might **provoke opposition to space reactors in general**. You could forge a coalition of those folks who don’t want any nuclear reactors in space and those who don’t want highly-enriched uranium in reactors and it could be a pretty compelling. ... NASA is introducing political risks to its plan by going this highly-enriched uranium route. What are the benefits of using highly-enriched uranium instead of low-enriched uranium? That’s another topic we want to examine at the symposium. The claim from some in NASA ... is that this type of reactor for use on the surface of a planetary body ... would be much heavier if it used low-enriched uranium rather than highly-enriched uranium. They say the reactor core would require much more uranium and that therefore the core would be bigger, therefore the whole reactor would be heavier.

Accidents cause nuke war

Steven **Starr**, Robin Collins, etc. September, 29th, 20**15**, Bulletin of the Atomic Scientists, New terminology to help prevent accidental nuclear war, <https://thebulletin.org/2015/09/new-terminology-to-help-prevent-accidental-nuclear-war/> // HZN Since the advent of US and Russian nuclear-armed ballistic missiles and early warning systems, the danger has always existed that a false warning of attack—believed to be true—could cause either nation to inadvertently launch a responsive “retaliatory” strike with its own nuclear forces. Fear of a disarming nuclear strike, especially during a crisis, creates immense pressure to use-or-lose nuclear forces if an attack is detected. Because **launch-ready** ballistic **missiles allow** either side to launch **a counter-strike before** nuclear **detonations confirm whether** or not **the** perceived “nuclear **attack**” **is real**, the launch of a retaliatory strike would in reality be a preemptive nuclear first-strike, should the warning prove to be false—**resulting in accidental nuclear war**. This pressure applies to any nation that might develop the ability to launch before detonation; as a result, what the United States and Russia decide to do could conceivably act as a role model for others—depending, of course, on the unique circumstances of each country. Consequently, there have been many calls to eliminate, or at least “de-alert,” these launch-ready forces—that is, to institute changes to the weapons systems that will prevent an overly hasty launch. This approach would make it physically impossible to start a nuclear war by accident, in response to a false warning of attack. Unfortunately, there has not been much enthusiasm in either the United States or Russia for de-alerting or eliminating high-alert nuclear forces. Yet the recent, escalating tensions between the United States and Russia have increased the need for both nations to address the dangers posed by their launch-ready strategic nuclear weapons. Almost all US and most Russian silo-based intercontinental ballistic missiles (ICBMs)—as well as some of their submarine-launched ballistic missiles—remain at launch-ready status, capable of rapid launch within a maximum of 15 minutes after receiving a warning. These weapons are armed with strategic nuclear warheads, and the detonation of even one such warhead could kill hundreds of thousands of people. There is another way to reduce the risk of accidental nuclear war: Russia and the United States could each independently adopt a policy of not launching their nuclear-armed missiles before confirmation of a nuclear detonation on their respective territories. Such a policy would make it impossible to launch a responsive or reflexive nuclear strike based upon a false warning of attack. To help them reach such commitments, the diplomatic world should address a factor that has spawned confusion and controversy: nuclear terminology.

C2 is Terror

Risk of nuclear terror is growing

Moulton 25 [Cyrus Moulton, 3-12-2025, "Risks of nuclear terrorism are high and growing.' New tools, alliances, renewed focus needed, group led by Northeastern expert recommends.", Northeastern Global News, <https://news.northeastern.edu/2024/06/18/nuclear-terrorism-risks-research/>]

For roughly 80 years, the United States has managed the threat of nuclear terrorism through nonproliferation treaties, agency programs, intelligence activities, international monitoring support and more, withstanding the Cold War, the fall of the Soviet Union, and 9/11. A National Academies committee led by Northeastern University's Stephen Flynn wants to ensure the U.S. remains prepared. "The issue of **nuclear terrorism remains very much a real one, there are enormous stakes involved and the risks are high, but the issue has been falling off the radar screen of the American public over the last 15 years,** and the skill set of people involved in managing it is aging out," says Flynn, professor of political science and founding director of the Global Resilience Institute at Northeastern. "We really need to keep our eye on the ball. It was quite timely for Congress to call for an assessment of this risk and provide recommendations for staying on top of this issue." In the 2021 National Defense Authorization Act, Congress mandated the U.S. Department of Defense and the U.S. Department of Energy's National Nuclear Security Agency to work with the National Academy of Sciences, Engineering and Medicine to assess the current state of nuclear terrorism and nuclear weapons and materials and advise the government on how to handle such issues. Flynn, an expert on national and homeland security, was appointed chair of the committee in 2022. The committee released its final report on Tuesday. The report finds that **a lot has changed since the issue of nuclear terrorism was forefront in Americans' minds following 9/11 and the buildup to the Iraq War.** "We had a war on terror after 9/11, but that didn't succeed in eliminating the terrorism threat," Flynn says. "Terrorism continues to morph." **The outbreak of the Israel-Hamas War**, which occurred as the committee finalized its report, demonstrates this morphing of terrorism. The **involvement of Hezbollah as a proxy of Iran**, and the involvement of Hamas — both groups are designated terrorist groups by the U.S. State Department — **highlight a world where non-states and nuclear-seeking states collaborate in warfare.** Flynn says. "The designation between non-state vs. state actors is blurry," Flynn says. "The assessment reveals we have to be focused on where those two things may overlap." Also "blurring" is the line between domestic terrorism and international terrorism, Flynn says. "Particularly when you look on the far right, **international terror groups are recruiting Americans into these organizations, and Americans are reaching out to extremist organizations that have terrorism elements,**" Flynn says.

Right wing terror too. Allam 24

Hannah Allam, National security reporter focusing on extremism and domestic terrorism. Education: University of Oklahoma, BA in mass communications Hannah Allam writes about extremism, domestic terrorism and national security for The Washington Post. She joined The Post in 2021 from NPR, where she was on the national security team. As a longtime foreign correspondent for McClatchy, Allam served as bureau chief in Baghdad during the Iraq War and in Cairo during the Arab Spring rebellions. She returned to the United States in 2012 and has reported extensively on U.S. foreign policy, race and religion, and the mainstreaming of extremist ideologies, 12/6/24, "Trump could hobble renewed fight against domestic terrorism, analysts warn", The Washington Post, <https://archive.ph/6mkCF#selection-541.0-544.0>, <https://www.washingtonpost.com/politics/2024/12/06/trump-counterterrorism-far-right-white-supremacists/>, DOA 5/10/25) KC

After more than two decades of prioritizing efforts to combat militant Islamist groups, U.S. counterterrorism programs have slowly shifted their focus in recent years to a domestic threat the FBI has said is deadlier and more active: violent far-right movements. But that pivot is likely to halt when President-elect Donald Trump takes office next month, according to analysts and former national security officials. Based on campaign promises and Trump's first-term record, analysts foresee a **rollback of initiatives aimed at curbing violent extremism, especially among right-wing movements.** Among the predictions: a **slashing of domestic terrorism resources.** White House pressure to investigate what Trump terms "the radical left" and cuts to programs aimed at the prevention of radicalization. Such moves would reverse steps taken by the Biden administration, which issued the nation's **first strategy on countering domestic terrorism** in 2021, a document that pledged a whole-of-society campaign to fight white supremacist and anti-government violence that had become "the most urgent terrorism threat the United States faces today." The threat picture has somewhat shifted since 2021, with a drop in far-right attacks and an

uptick in foreign-inspired plots. Analysts say the lull among the former is due in part to Justice Department prosecutions of violent extremist groups including the Proud Boys, Oath Keepers and neo-Nazi factions. But researchers say the same **domestic movements that mobilized under the first Trump administration are poised to make a comeback if given a permissive climate.** An analysis last month by Colin Clarke of the Soufan Center, a security-focused think tank, said **“a second Trump term could reduce, if not altogether eliminate, US government funding available for domestic terrorism or at least right-wing extremism.”** Trump and several of his picks for senior posts have espoused ideologies the Biden counter-extremism project was designed to combat, including white supremacist **“replacement”** theory, **xenophobia**, **antisemitism** and **Islamophobia**. The **president-elect’s promise to pardon some rioters** who took part in the storming of the U.S. Capitol on **Jan. 6, 2021**, is another setback to what the Biden administration had **touted as progress on the domestic terrorism front.** Taylor Rogers, a spokesperson for the Trump-Vance transition team, did not address specific questions about the next administration’s priorities in combating domestic terrorism. “President Trump will deliver on his promise to protect our country from terrorist threats and Make America, and the world, Safe Again!” Rogers said in a statement. Trump surrogates have pushed back on claims that racial animus and anti-immigrant extremism are core to the MAGA movement, noting that a **surge in support from voters of color** helped Trump win the **2024 election**. The White House sets policy priorities that trickle down to the funding and investigative assets of federal agencies charged with monitoring a wide range of threats to the United States. Analysts and former officials say their main concern is a **replay of what they saw in the first Trump presidency — attempts to wield counterterrorism powers as a political cudgel and going after Islamist militants and far-left groups while playing down the far-right threat.** Such a turn, **extremism researchers say, could embolden movements that assert themselves as a shadow MAGA army.** Already, anti-immigrant groups have **expressed an eagerness** to assist with Trump’s promised mass-deportation plan, an offer that raises the specter of militia vigilantism and increased anti-Latino hostility. **“This is an exciting prospect for most of them,”** said Amy Cooter, a militia specialist at the Middlebury Institute’s Center on Terrorism, Extremism and Counterterrorism. **“Border militias have already been engaged with this and see this as sort of a green light to potentially up their aggressive actions.”** Lessons from last time For clues on how Trump might approach violent extremism this time around, analysts **recall the test that came early in his first presidency after a deadly white supremacist rally in Charlottesville.** Analysts say **Trump’s muted response to the 2017 hate march** indicated a willful blindness to the momentum of the far right. Months earlier, federal **authorities issued an intelligence bulletin** that said white supremacists were responsible for **49 homicides in 26 attacks from 2000 to 2016, “more than any other domestic movement.”** But the Trump White House was loath to address the topic and repeatedly intervened to remove or weaken language in reports related to **white supremacist threats**, according to two former counterterrorism officials who spoke on the condition of anonymity to discuss national security matters. **Similar accounts emerged in a whistleblower complaint by a then-official who said superiors told him to modify intelligence reports, including about white supremacists, to bring them in line with Trump’s public statements.** A Homeland Security spokesman **denied the claims.** Critics point to a 2018 White House **strategy report** as an object lesson in the Trump approach to counterterrorism. The 25-page document mentions Islamist militants nearly two dozen times, with descriptions such as **“vile,” “hateful” and “totalitarian.”** Domestic terrorism gets a brief mention only at the end: **“Lastly,” the section begins, followed by a couple of paragraphs that lumped together “racially motivated extremism, animal rights extremism, environmental extremism, sovereign citizen extremism, and militia extremism.”** Days after the White House released the report in October 2018, **a gunman killed 11 people at the Tree of Life synagogue** in Pittsburgh, the deadliest anti-Jewish attack in U.S. history. The following spring brought a **second fatal shooting at a synagogue** — in Poway, California, by an assailant who previously tried to burn down a mosque. A few months after that came a **racist rampage** at a Walmart in El Paso and another bloody milestone: the deadliest assault on Latinos in U.S. history. The El Paso attack prompted a rejection of white supremacist violence from Trump, who previously had **said** he didn’t think it was a growing threat. **“In one voice, our nation must condemn racism, bigotry and white supremacy,”** Trump said. **“These sinister ideologies must be defeated.”** That more direct approach was echoed in a 2019 counterterrorism strategy that spelled out the threat of white supremacist movements and pledged aggressive pushback — a departure from the 2018 document. Still, behind the scenes, according to former officials and researchers who

worked closely with the administration, there was **little political will** to grapple with the far-right threat. Federal authorities began using terms such as “RMVE,” for “racially motivated violent extremism,” which was criticized by activists and researchers as a euphemism for deadly white supremacists. The term was also vague enough that it allowed officials to introduce a subcategory on “black identity violent extremism,” drawing outrage from civil rights groups who called it an attempt to equate Black Lives Matter protesters with far-right militants. Alex DiBranco, executive director of the Institute for Research on Male Supremacism, said some anti-fascist and gender-focused nonprofits are concerned again about the Trump administration seeking to discredit or even prosecute them by classifying them as far-left domestic terrorist groups. “When you think about Trump and the way he talks about anti-fascist organizations, it’s very easy to think about him delineating lots of organizations as terrorist-supporting,” DiBranco said. During Trump’s first term, former officials said, frustrated staffers tried to push for more balanced positions but were steamrolled by the hard-line senior Trump aide **Stephen Miller**, who is returning to the administration with similar powers. Another polarizing returnee is Trump’s pick to oversee counterterrorism policy at the National Security Council, **Sebastian Gorka**, whose open hostility toward Islam and prickly persona contributed to his **exit** after only a few months in the first Trump administration. For all the dysfunction of the first Trump term, a former official said, counterterrorism leaders aggressively pushed the MAGA agenda while remaining cognizant of legal pitfalls and making sure policies could withstand challenges. “They had an appreciation for the importance of doing it right. ‘Move faster, but do it right,’” the former official recalled. Whether that mantra is carried into a second term is an open question. Some are bracing for a constitutional crisis over policies such as mass deportation that are sure to bring legal battles. “You don’t have another election and you own both chambers of Congress, so what if you just ignored court injunction?” the former official said. “What tools do we have to actually enforce court orders? They’re all in the executive branch.” A shifting threat picture Extremism researchers say they expect one immediate effect of Trump’s return to be a repeal of the culture shift Biden tried to bring about with his 2021 domestic terrorism strategy, which pledged more training and personnel to monitor violent far-right networks. Researchers say Biden ultimately fell short on promises outlined in the strategy but contributed to what analysts have **described** as an overdue rethinking of policies that hadn’t evolved to meet the latest threats. In recent years, Pentagon and homeland security officials have launched efforts to root out extremism within their ranks. Academic researchers and community groups were awarded federal grants to study and prevent radicalization. That work, however, is not in line with the MAGA agenda. Trump-aligned Republicans have portrayed the stepped-up fight against domestic terrorism as a thought-police exercise that could infringe on First Amendment rights.

Affirming would create two risks

First, increasing enriched uranium. Pashby 25

Tom Pashby: contributor for the New Civil Engineer. 1/10/25, “US Government assessing risk of SMRs being used to make dirty bombs”, New Civil Engineer, <https://www.newcivilengineer.com/latest/us-government-assessing-risk-of-smrs-being-used-to-make-dirty-bombs-10-01-2025/> // DOA: 3/13/25)JDE

The risk of small modular reactors (SMRs) being used to provide access to materials for dirty bombs (radioactive explosive devices) is being reviewed by the US Government. The review follows the publication of a paper published in the Science journal looking at the increase in **demand for high-assay low-enriched uranium (HALEU) which can be used to fuel advanced modular reactors (AMRs) and SMRs.** The paper, titled The weapons potential of high-assay low-enriched uranium posited that “Recent promotion of new reactor technologies appears to disregard decades-old concerns about nuclear proliferation”. Scott Kemp, Edwin S. Lyman, Mark R. Deinert, Richard L. Garwin, and Frank N. von Hippel authored the paper, which said: “Preventing the proliferation of nuclear weapons has been a major thrust of international policymaking for more than 70 years. “Now, **an explosion of interest in a nuclear reactor fuel** called high-assay low-enriched uranium (HALEU), **spurred by billions of dollars in US Government funding, threatens to undermine that system** of control.” “HALEU contains between 10 and 20% of the isotope uranium-235. At 20% 235U and above, the isotopic mixture is called highly enriched uranium (HEU) and **is internationally recognised as being directly usable in nuclear weapons.** “However, the practical limit for weapons lies below the 20% HALEU-HEU threshold. “**Governments and others promoting the use of HALEU have not carefully considered the potential proliferation and terrorism risks** that the wide adoption of this fuel creates.” The “terrorism risks” the paper refers to **can be understood to mean the creation of dirty bombs, which are relatively low-tech devices.** Conventional explosives are used, rather than fission or fusion reactions, to spread radioactive material. US Government responds to paper announcing review U.S. Department of Energy under secretary for nuclear security and National Nuclear Security Administration (NNSA) administrator Jill Hruby wrote a letter published on 2 January in the peer review ‘eLetters’ section of the academic paper published on 6 June 2024. Hruby said the paper in Science, and a subsequent debate between the authors the wider nuclear

community, promoted the NNSA to respond. "Given concerns about climate change coupled with increased energy demand, nuclear energy is poised for growth," she said. "Advanced and small modular reactors (A/SMRs) using HALEU fuel are under active development "NNSA recognises that reactor type, fuel enrichment level, fuel quantity, and fuel form are important factors in evaluating proliferation risks and believes that risk-informed and adaptive approaches to the proliferation challenges inherent in nuclear energy are warranted." She continued: "NNSA has a program to support U.S. A/SMR developers on security- and safeguards-by-design and promotes best practices for nuclear energy deployment by partnering with the International Atomic Energy Agency (IAEA). "With its national laboratories, NNSA has regularly collected data and evaluated HALEU risks, and is currently finalising plans to commission a National Academies report. Although these reports are largely classified, the information is used to inform programs, develop actions, and make recommendations to stakeholders. "It is important to address proliferation concerns about HALEU and important to responsibly develop A/SMRs. NNSA commits to working with academia, industry, the public, and IAEA to do just that." On 20 January 2025, President Trump will be sworn in for a second term, at which point he will be free to replace public servants with his preferred appointees at organisations including the NNSA. HALEU not being considered in the UK's SMR competition The main focus of SMR developers in the UK is the UK Government's Great British Nuclear (GBN) SMR competition. The competition winner or winners will have the opportunity to build a fleet of SMRs with government support on siting and funding. A GBN source confirmed to NCE that none of the developers in its SMR competition – name the developers – were proposing to use HALEU. NCE [has previously explored the topic of whether waste from SMRs could be used to make nuclear warheads](#) after the Department for Energy Security and Net Zero (DESNZ) did not rule out whether it was investigating this possibility. HALEU still popular in wider SMR research Work on SMRs outside of the GBN competition continues to heat up. Last Energy UK and newcleo are both active in the UK and are pushing for micro modular reactors and advanced modular reactors respectively. King's College London research fellow Ross Peel told NCE that [HALEU continues to be popular with SMR developers and the risks faced outside of the USA are similar](#). Peel has recently authored papers with King's on Insider Threat Security Considerations for Advanced and Small Modular Reactors and Nuclear Industry Views on the Security of Small Modular Reactors: Results of a pilot survey, both published in October 2024. Peel said he has been "very pro-nuclear" for years but [is working to help the industry to address his security concerns around SMRs, which he believes is "not where it should be"](#). Peel said: "The article in Science caused a major argument when it came out and since, and is still doing so as more people become aware of it. The American Nuclear Society, for instance, prepared a letter to Science denouncing the article and tearing down the methods used by the authors, who are all highly respected non-proliferation scholars. "HALEU is central to the plans of many developers of novel nuclear technology because of the various benefits it offers. [The potential security and proliferation risks are real](#), however, and proper consideration needs to be given to these. "The technical risks of HALEU in the UK and US are not different, although we do have a different background level of security risk than they do, which means that those technical risks might be experienced and managed in a different way. "Both countries have well-developed nuclear security infrastructure, however, which will help to manage these risks. [A lot of concern from both countries will likely be around the export of HALEU fuel to reactors abroad, in foreign countries with less mature nuclear security and non-proliferation systems. "Normalising the possession and use of uranium of up to 20% U-235 means that many states who might concern the US and/or the UK will be able to maintain a justifiable position that is that much closer to possessing nuclear weapons, whilst non-state actors](#) (terrorists, criminals, and even simple disgruntled employees at nuclear sites and more) [will potentially see their way to accessing a type of nuclear material that they could previously almost never imagine getting hold of](#). "Developers should be taking seriously the increased security and proliferation risks associated with HALEU use. I would recommend this be considered from the earliest stages of reactor and fuel design – the decision to use HALEU must be based on a full consideration of all factors, including security risk and proliferation risk. "Technology designers who think about these issues throughout their design process, in an integrated way alongside safety, economics, operability and all the rest, will have the greatest chance of producing well-conceived designs that address risks effectively and produce cost-effective nuclear energy." Mixed oxide (MOX) fuel is touted by some developers like newcleo as a way of reducing the burden on society of nuclear waste by using it to fuel its own AMR design. newcleo said: "Through an innovative combination of existing and proven technologies, and by reviving a nuclear industry model based on the manufacture and multi-recycling of Mixed Oxide (Mox) fuel, [newcleo aims to close the nuclear fuel cycle while safely producing clean, affordable, and practically inexhaustible energy required for low carbon economies](#)." Peel continued: "MOX is different to HALEU. MOX is about using a mixture of uranium oxide and plutonium oxide to make the fuel (usually – other oxides can creep in too). Almost all nuclear fuel today is uranium oxide. "HALEU is to do specifically with the uranium within the uranium oxide, specifically, how much of it is uranium-235 vs uranium-238. Most reactors today operate with 2-5% uranium-235 within the overall uranium. HALEU is about moving that into a range of up to 19.999% - going to 20% would make it HEU (highly enriched uranium, which is considered to be unacceptable due to weapons-use risks). "So in theory, you could put HALEU into MOX, although no-one has proposed this as the whole point of putting plutonium in there is to replace the need for uranium-235. If you have both plutonium and HALEU in the same fuel you're effectively doing two complicated and costly processes a bit, rather than focussing on doing one process more." Anti-proliferation body says lots of [SMRs increases weapons risk](#) The Nuclear Information Service (NIS) describes itself as "an independent, not-for-profit research organisation" which investigates the UK's nuclear weapons programme. NIS director David Cullen said: "This move by the NNSA is a tacit acknowledgement that warnings being raised about the proliferation risks of HALEU are not

unfounded. “I hope that some of the results of their study will be made public so that there is a greater understanding of the dangers, which are just as relevant to the UK as to the US. “We don't know very much about what would be done in the UK to mitigate the risk, as none of the SMR reactor designs have progressed very far in getting regulatory approval. “Only the Rolls-Royce SMR has passed the second stage of the Generic Design Assessment (GDA) process, which means that the Office for Nuclear Regulation have not identified any foundational problems with that design.” GDA allows regulators to assess the safety, security, safeguards and environmental aspects of new reactor designs before site-specific proposals are brought forward. The GDA process assesses new nuclear power plant designs for deployment in the UK, demonstrating they can be built, operated and decommissioned in accordance with the highest standards of safety, security, safeguards and environmental protection. Cullen continued: “The second stage does assess security and safeguards (i.e. measures to prevent clandestine diversion of nuclear material), but only to identify fundamental flaws. “The third stage of the process is much more detailed. I hope the ONR will have an opportunity to draw upon the work the NNSA is undertaking. “Unfortunately, the industry's vision for SMRs, where a much larger number of smaller reactors are deployed, substantially complicates both counter-proliferation monitoring and ensuring the security of nuclear material. “Design measures might be able to counter some of the more opportunistic security threats against an individual site, but they cannot meaningfully guard against the diversion of nuclear material by SMR operators. “Fundamentally, a greater number of sites and more material creates more opportunities for bad actors. There is no way to design around this basic fact.”

This is the missing piece for extremists

NAE 19 (The National Academy of Engineering (NAE) is an American [nonprofit, non-governmental organization](#). It is part of the [National Academies of Sciences, Engineering, and Medicine \(NASEM\)](#), along with the [National Academy of Sciences \(NAS\)](#) and the [National Academy of Medicine \(NAM\)](#), September 16, 2019, National Academy of Engineering , “Prevent Nuclear Terror”,<https://www.engineeringchallenges.org/challenges/nuclear.aspx>, DOA 3/10/25) KC Long before 2001, defenders of national security worried about the possible immediate death of 300,000 people and the loss of thousands of square miles of land to productive use through an act of terror. From the beginnings of the nuclear age, the materials suitable for making a weapon have been accumulating around the world. Even some actual bombs may not be adequately secure against theft or sale in certain countries. Nuclear reactors for research or power are scattered about the globe, capable of producing the raw material for nuclear devices. And the instructions for building explosive devices from such materials have been widely published, suggesting that access to the ingredients would make a bomb a realistic possibility. “It should not be assumed,” write physicists Richard Garwin and Georges Charpak, “that terrorists or other groups wishing to make nuclear weapons cannot read.” Consequently, the main obstacle to a terrorist planning a nuclear nightmare would be acquiring fissile material — plutonium or highly enriched uranium capable of rapid nuclear fission. Nearly 2 million kilograms of each have already been produced and exist in the world today. It takes less than ten kilograms of plutonium, or a few tens of kilograms of highly enriched uranium, to build a bomb. Fission, or the splitting of an atom's nucleus, was discovered originally in uranium. For a bomb, you need a highly enriched mass of uranium typically consisting of 90 percent uranium-235, a form found at levels of less than 1 percent in uranium ore. Fuel for nuclear power reactors is only enriched 3 percent to 5 percent with respect to this trace form of uranium, and so is no good for explosions. Highly enriched bomb-grade uranium is, however, produced for some reactors (such as those used to power nuclear submarines and for some research reactors) and might be diverted to terrorists.

Second, plutonium waste

NAE 19 (The National Academy of Engineering (NAE) is an American [nonprofit, non-governmental organization](#). It is part of the [National Academies of Sciences, Engineering, and Medicine \(NASEM\)](#), along with the [National Academy of Sciences \(NAS\)](#) and the [National Academy of Medicine \(NAM\)](#), September 16, 2019, National Academy of Engineering , “Prevent Nuclear

Terror”, <https://www.engineeringchallenges.org/challenges/nuclear.aspx>, DOA 3/10/25) KC

Besides uranium, another serious concern is the synthetic radioactive element plutonium. Produced by the nuclear “burning” of uranium in reactors, plutonium is a radioactive hazard in itself and also an ideal fuel for nuclear explosives. Worldwide, more than 1,000 reactors operate nowadays, some producing electric power, others

mostly used for research. Plutonium produced in either reactor type could be extracted for use in weapons.

Nuclear security therefore represents one of the most urgent policy issues of the 21st century. In addition to its political and institutional aspects, it poses acute technical issues as well. In short, engineering shares the formidable challenges of finding all the dangerous nuclear material in the world, keeping track of it, securing it, and detecting its diversion or transport for terrorist use. What are the challenges to preventing nuclear terror attacks? Challenges include: (1) how to secure the materials; (2) how to detect, especially at a distance; (3) how to render a potential device harmless; (4) emergency response, cleanup, and public communication after a nuclear explosion; and (5) determining who did it. All of these have engineering components; some are purely technical and others are systems challenges. Some of the technical issues are informational — it is essential to have a sound system for keeping track of weapons and nuclear materials known to exist, in order to protect against their theft or purchase on the black market by terrorists. Another possible danger is that

sophisticated terrorists could buy the innards of a dismantled bomb, or fuel from a nuclear power plant, and build a homemade explosive device. It is conceivable that such a device would produce considerable damage, with explosive power perhaps a tenth of the bomb that destroyed Hiroshima.

With help from renegade professional designers, terrorists might even build a more powerful device, equaling or exceeding the force of the Hiroshima bomb. Detonated in a large city, such a bomb could kill 100,000 people or more. Building a full-scale bomb would not be easy, so terrorists might attempt instead to cause other forms

of nuclear chaos, possibly using conventional explosives to blast and scatter radioactive material around a city. Such “dirty bombs” might cause relatively few immediate deaths, but they could contaminate large areas of land, cause potential economic havoc to the operation of a city, and increase long-term cancer incidence. There are millions of potential sources of radioactive material, which is widely used in hospitals, research facilities, and industry -- so preventing access is extremely difficult. Responding to a “dirty bomb” attack would also involve engineering challenges ranging from monitoring to cleanup, of both people and places. Concern for nuclear security complicates the use of nuclear energy for peaceful purposes, such as generating electricity. Ensuring that a nation using nuclear power for energy does not extract plutonium for

bomb building is not easy. Diversion of plutonium is much more difficult when a country opts for a “once through” fuel cycle that keeps the plutonium with the highly radioactive spent fuel, rather than a

“closed” fuel cycle where spent fuel is reprocessed and plutonium separated out. Simple record keeping could be faked or circumvented. Regulations requiring human inspection and video monitoring are surely not foolproof.

It’s likely

Earnhardt et al 21 (Becca Earnhardt is a Research Associate with the Nuclear Security program at the Stimson Center. Brendan Hyatt is a nuclear security intern at the Stimson Center. Nickolas Roth serves as a senior director of Nuclear Materials Security at the Nuclear Threat Initiative, January 14, 2021, “A threat to confront: far-right extremists and nuclear terrorism”, Bulletin of the Atomic Scientists,

<https://thebulletin.org/2021/01/a-threat-to-confront-far-right-extremists-and-nuclear-terrorism/>, DOA 4/11/23) KC

Last March, neo-Nazi Timothy Wilson was killed during a shootout as he was planning to bomb a hospital treating COVID-19 patients. Like other neo-Nazis, Wilson viewed the pandemic and increased unrest among the American public as an opportunity to popularize Nazi ideas, spark further chaos, and accelerate societal collapse.^[1] This past week, Ashli Babbitt was shot and killed while storming the US Capitol as part of a right-wing uprising; several years earlier, she was an employee of the Calvert Cliffs nuclear plant, exhibiting violent behavior during this

period. ^[2] Acts of violence by far-right extremists are on the rise in the United States. Until now, most of these incidents have lacked sophistication, but a critical question for national security experts is

whether US far-right extremist groups that espouse violence can carry out something catastrophic.

Every president serving in the last two decades has said that nuclear terrorism is a significant national security threat. Analysis of this threat has been, for good reason, mostly focused on foreign extremist

According to *Shōmei Shōsho*, resulting in the deaths of 182 people.¹ Although, however, it was the only text referred to by the *Shōmei Shōsho* in 2011, violent left extremist Aomori Branch's terror attacks killed 77 people in Japan. **Dozens of pages in his 1,500-page "manifesto" discuss the execution of different acts of nuclear terrorism.[6] An increasingly active generation of violent far-right extremist groups and actors have adopted an especially dangerous ideology that is compatible with an act of nuclear terror: accelerationism.**

The trio stockpiled weapons and explosives with the intent to blow up, among other targets, a nuclear power plant. In their apartment, police found pipe bomb components, traces of the explosive hexamethylene triperoxide diamine, and detonators. Police also detected two radioactive materials—thorium and americium—in his bedroom. AWD was not the first far-right extremist in America to consider using radioactive or nuclear materials in a terrorist attack. Several previously documented attempts by violent far-right extremists to commit acts of ideological terror indicate a longstanding interest among far-right actors in highly destructive, non-conventional acts of terror.

The most concerning evidence that violent far-right extremists might have access to nuclear weapons or weapons-useable material lies in their presence in the US military and other parts of the federal government. The presence of white supremacists in the military is well-known and well-documented. A 2019 poll revealed that 36 percent of active-duty military troops had witnessed evidence of white supremacist ideology in the military.²⁰ In 2020 alone, there were several recent examples of active service members being arrested for plotting far-right extremist acts of terrorism.²¹

Information about the Right to Know Act and other laws that require agencies to release information to the public is available at www.foia.gov. For more information about the Right to Know Act, please contact the Department of Energy's Freedom of Information Act (FOIA) Officer at foia@hq.doe.gov or call 1-800-368-5888. For more information about the Right to Know Act, please contact the Department of Energy's Freedom of Information Act (FOIA) Officer at foia@hq.doe.gov or call 1-800-368-5888.

To what extent have far-right extremists penetrated organizations like national laboratories or nuclear material production facilities, where they might be able to acquire highly-enriched uranium or plutonium—the building blocks for constructing an improvised nuclear device.

The Department of Energy is currently conducting a review of the extent to which far-right extremists have penetrated organizations like national laboratories or nuclear material production facilities, where they might be able to acquire highly-enriched uranium or plutonium—the building blocks for constructing an improvised nuclear device. The review is ongoing and the results will be published in the near future. The Department of Energy is currently conducting a review of the extent to which far-right extremists have penetrated organizations like national laboratories or nuclear material production facilities, where they might be able to acquire highly-enriched uranium or plutonium—the building blocks for constructing an improvised nuclear device. The review is ongoing and the results will be published in the near future.

<https://www.energy.gov/nnsa/articles/reducing-risk-nuclear-terrorism-fact-sheet>, DOA 3/3/25) RK

Arguello & Buis 18 [Irma Arguello and Emiliano J. Buis, * founder and chair of the NPSGlobal Foundation, and head of the secretariat of the Latin American and Caribbean Leadership Network. She holds a degree in physics, a Master's in business administration, and completed graduate studies in

defense and security, ** lawyer specializing in international law. He holds a PhD from the University of Buenos Aires (UBA), a Master's in Human and Social Sciences from the University of Paris/Panthéon-Sorbonne, and a postgraduate diploma in national defense from the National Defense School, "The global impacts of a terrorist nuclear attack: What would happen? What should we do?," 2018, *Bulletin of the Atomic Scientists*, Vol. 74, Issue 2, pp. 114-119, <https://doi.org/10.1080/00963402.2018.1436812>, Recut EA]

The consequences of a terrorist nuclear attack A small and primitive 1-kiloton fission bomb (with a yield of about one-fifteenth of the one dropped on Hiroshima, and certainly much less sophisticated; cf. Figure 1), detonated in any large capital city of the developed world, would cause an unprecedented catastrophic scenario. [FIGURE 1 OMITTED] An estimate of direct effects in the attack's location includes a death toll of 7,300-to-23,000 people and 12,600-to-57,000 people injured, depending on the target's geography and population density. Total physical destruction of the city's infrastructure, due to the blast (shock wave) and thermal radiation, would cover a radius of about 500 meters from the point of detonation (also known as ground zero), while ionizing radiation greater than 5 Sieverts – compatible with the deadly acute radiation syndrome – would expand within an 850-meter radius. From the environmental point of view, such an area would be unusable for years. In addition, radioactive fallout would expand in an area of about 300 square kilometers, depending on meteorological conditions (cf. Figure 2). [FIGURE 2 OMITTED] But the consequences would go far beyond the effects in the target country, however, and promptly propagate worldwide. Global and national security, economy and finance, international governance and its framework, national political systems, and the behavior of governments and individuals would all be put under severe trial. The severity of the effects at a national level, however, would depend on the countries' level of development, geopolitical location, and resilience. Global security and regional/national defense schemes would be strongly affected. An increase in global distrust would spark rising tensions among countries and blocs, that could even lead to the brink of nuclear weapons use by states (if, for instance, a sponsor country is identified). The consequences of such a shocking scenario would include a decrease in states' self-control, an escalation of present conflicts and the emergence of new ones, accompanied by an increase in military unilateralism and military expenditures. Regarding the economic and financial impacts, a severe global economic depression would rise from the attack, likely lasting for years. Its duration would be strongly dependent on the course of the crisis. The main results of such a crisis would include a 2 percent fall of growth in global Gross Domestic Product, and a 4 percent decline of international trade in the two years following the attack (cf. Figure 3). In the case of developing and less-developed countries, the economic impacts would also include a shortage of high-technology products such as medicines, as well as a fall in foreign direct investment and a severe decline of international humanitarian aid toward low-income countries. We expect an increase of unemployment and poverty in all countries. Global poverty would raise about 4 percent after the attack, which implies that at least 30 million more people would be living in extreme poverty, in addition to the current estimated 767 million. [FIGURE 3 OMITTED] In the area of international relations, we would expect a breakdown of key doctrines involving politics, security, and relations among states. These international tensions could lead to a collapse of the nuclear order as we know it today, with a consequent setback of nuclear disarmament and nonproliferation commitments. In other words, the whole system based on the Nuclear Non-Proliferation Treaty would be put under severe trial. After the attack, there would be a reassessment of existing security doctrines, and a deep review of concepts such as nuclear deterrence, no-first-use, proportionality, and negative security assurances. Finally, the behavior of governments and individuals would also change radically. Internal chaos fueled by the media and social networks would threaten governance at all levels, with greater impact on those countries with weak institutional frameworks. Social turbulence would emerge in most countries, with consequent attempts by governments to impose restrictions on personal freedoms to preserve order – possibly by declaring a state of siege or state of emergency – and legislation would surely become tougher on human rights. There would also be a significant increase in social fragmentation – with a deepening of antagonistic views, mistrust, and intolerance, both within countries and towards others – and a resurgence of large-scale social movements fostered by ideological interests and easily mobilized through social media. Prevention, preparedness, response Given the severity of the impacts, no country in possession of nuclear weapons or weapons-usable materials can

guarantee its full protection against nuclear terrorism or nuclear smuggling for proliferation purposes. Nor is it realistic to conceive of full compensation to others in the international community, if a catastrophic event happens because of any country's acts or omissions. Therefore, we consider that prevention is the only acceptable way forward to preserve global stability.

That causes extinction.

Starr 14 (Steven Starr: Director, Clinical Laboratory Science Program at the U of Missouri. Senior scientist for Physicians for Social Responsibility. 5/30/14, "The Lethality of Nuclear Weapons: Nuclear War has No Winner", Centre for Research on Globalization, <http://www.globalresearch.ca/the-lethality-of-nuclear-weapons-nuclear-war-has-no-winner/538561> 1 // DOA: 4/1/21)JDE

Paul Craig Roberts held top security clearances. He has repeatedly warned that a US-Russian nuclear war would wipe out the human race, along with all other complex forms of life. As a scientist with expert knowledge, I wish to echo and explain his warning.////Nuclear war has no winner. Beginning in 2006, several of the world's leading climatologists (at Rutgers, UCLA, John Hopkins University, and the University of Colorado-Boulder) published a series of studies that evaluated the long-term environmental consequences of a nuclear war, including baseline scenarios fought with merely 1% of the explosive power in the US and/or Russian launch-ready nuclear arsenals. They concluded that the consequences of even a "small" nuclear war would include catastrophic disruptions of global climate^[i] and massive destruction of Earth's protective ozone layer^[ii]. These and more recent studies predict that global agriculture would be so negatively affected by such a war, a global famine would result, which would cause up to 2 billion people to starve to death.^[iii]//// These peer-reviewed studies – which were analyzed by the best scientists in the world and found to be without error – also predict that a war fought with less than half of US or Russian strategic nuclear weapons would destroy the human race.^[iv] In other words, a US-Russian nuclear war would create such extreme long-term damage to the global environment that it would leave the Earth uninhabitable for humans and most animal forms of life.//// A recent article in the Bulletin of the Atomic Scientists, "Self-assured destruction: The climate impacts of nuclear war",^[v] begins by stating://// "A nuclear war between Russia and the United States, even after the arsenal reductions planned under New START, could produce a nuclear winter. Hence, an attack by either side could be suicidal, resulting in self-assured destruction." In 2009, I wrote an article^[vi] for the International Commission on Nuclear Non-proliferation and Disarmament that summarizes the findings of these studies. It explains that nuclear firestorms would produce millions of tons of smoke, which would rise above cloud level and form a global stratospheric smoke layer that would rapidly encircle the Earth. The smoke layer would remain for at least a decade, and it would act to destroy the protective ozone layer (vastly increasing the UV-B reaching Earth^[vii]) as well as block warming sunlight, thus creating Ice Age weather conditions that would last 10 years or longer.//// Following a US-Russian nuclear war, temperatures in the central US and Eurasia would fall below freezing every day for one to three years; the intense cold would completely eliminate growing seasons for a decade or longer. No crops could be grown, leading to a famine that would kill most humans and large animal populations.//// Electromagnetic pulse from high-altitude nuclear detonations would destroy the integrated circuits in all modern electronic devices^[viii], including those in commercial nuclear power plants. Every nuclear reactor would almost instantly meltdown; every nuclear spent fuel pool (which contain many times more radioactivity than found in the reactors) would boil-off, releasing vast amounts of long-lived radioactivity. The fallout would make most of the US and Europe uninhabitable. Of course, the survivors of the nuclear war would be starving to death anyway.////

