April 4, 2024

President Joe Biden
The White House
1600 Pennsylvania Ave. NW
Washington, DC 20500

Re: Proliferation Risks of Planned Reprocessing Plant to Extract Plutonium from Spent Nuclear Fuel

Dear Mr. President,

We, the undersigned nuclear nonproliferation experts, write to express grave concern about a recently announced plan by the U.S. company SHINE to build a domestic, commercial pilot reprocessing plant that would extract annually enough nuclear-weapons-usable plutonium for more than 100 atomic bombs. The facility would violate the Biden Administration's own nuclear security policy, as enunciated last year in NSM-19, and break a half-century U.S. abstention from civilian reprocessing, which was initiated by the federal government due to concerns about the proliferation danger of this technology. If such a facility were constructed in the United States, it would legitimize the building of reprocessing plants in other countries, thereby increasing risks of proliferation and nuclear terrorism. SHINE seeks federal support in the form of loan guarantees, but we urge you to announce that you will not provide any federal support for this project, which has little hope of attracting private funding due to its security and economic risks, and that you will discourage NRC licensing of this plant.

SHINE announced on February 29, 2024 its plan to begin operating a reprocessing plant "with a processing capacity of 100 metric tons [of spent fuel] a year beginning in the early 2030s." The feed material, commercial spent nuclear fuel, contains approximately one percent plutonium, so this plant would extract about one metric ton of plutonium annually. The IAEA's "significant quantity" of plutonium is 8 kilograms for a Nagasaki-type bomb, and modern fission warheads require even less, so this plant annually would separate plutonium sufficient for more than 100 nuclear weapons.

SHINE advocated this month that, "Government can help by providing loan guarantee programs." However, the Biden Administration's nuclear security policy – NSM-19 of March 2, 2023 – states that, "it is the policy of the United States to…Focus civil nuclear research and development on approaches that avoid producing and accumulating weapons-usable nuclear material."

SHINE claims that its planned reprocessing technology, which would leave the extracted plutonium mixed with uranium, "provides increased proliferation resistance." However, scientists from six U.S. national laboratories reached the opposite conclusion in a 2009 study, saying this technology offers "minimal additional proliferation resistance…when considering the potential for diversion, misuse, and breakout scenarios." The U.S. National Academies similarly concluded in its recent 2023 study that, "Fuel cycles involving reprocessing and separation of fissile material that could be weapons usable pose greater proliferation and terrorism risks."

President Gerald Ford originally halted domestic reprocessing of commercial spent nuclear fuel in 1976, explaining that, "The same plutonium produced in nuclear power plants can, when chemically separated, also be used to make nuclear explosives…I have concluded that the reprocessing and recycling of plutonium should not proceed." Despite policy fluctuations since then, commercial reprocessing has never restarted in this country and should not do so under your watch.

We applaud your nonproliferation policy established in NSM-19, and we urge you to implement it by making clear that your Administration will not support federal funding (including loan guarantees) or licensing for SHINE's proposed reprocessing plant or any other non-weapons facility that would increase the production and/or use of nuclear weapons-usable material.

Thank you for consideration of our views on this vital national security matter.

Sincerely,

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Former Special Representative of the President (Obama) for Nuclear Nonproliferation

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Allison Macfarlane
Director, School of Public Policy and Global Affairs, University of British Columbia; and
Former Chairman, US Nuclear Regulatory Commission

Peter Bradford
Former Commissioner, US Nuclear Regulatory Commission

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Cc:
The Honorable Jennifer M. Granholm, Secretary of Energy
The Honorable Jill Hruby, Administrator of the National Nuclear Security Administration
The Honorable Sasha Baker, Under Secretary of Defense for Policy (Acting)
The Honorable Christopher T. Hanson, Chairman, Nuclear Regulatory Commission
Pranay Vaddi, Senior Director for Arms Control and Nonproliferation, National Security Council
C.S. Eliot Kang, Principal Deputy Asst. Secretary of State for International Security and Nonproliferation
Drew Walter, Deputy Assistant Secretary of Defense for Nuclear Matters
Rian Bahran, Asst. Director for Nuclear Technology and Strategy, Office of Science and Technology Policy