



What do I need to know about EPA’s Proposed Endangerment Finding for Lead Emissions from Piston Aircraft?

Eliminate Aviation Gasoline Lead Emissions (EAGLE) White Paper

EAGLE is pleased to acknowledge that the U.S. Environmental Protection Agency (EPA) has issued a proposed finding on Friday, October 7, that lead (Pb) emissions from aircraft operating on leaded fuel cause or contribute to air pollution which may reasonably be anticipated to endanger public health ([EPA Proposes Endangerment Finding for Lead Emissions from Aircraft Engines that Operate on Leaded Fuel | US EPA](#)). EPA’s notice does not impose any new requirements on, nor limit the distribution, sale or use of the current aviation gasoline which is necessary for safe operation of the current fleet.

This EPA action, if finalized, begins a multistep regulatory process involving both the EPA and FAA. When coupled with the ongoing EAGLE initiative, these efforts facilitate an orderly and safe transition to a lead-free avgas future.

The general aviation community remains committed to removing lead from aviation gasoline through the EAGLE initiative. EAGLE is an industry/federal government collaborative initiative established to support the development and qualification of unleaded fuels and assist with logistics in getting those fuels to market, while ensuring the availability of high octane aviation gasoline for reasons of safety. The stated EAGLE goal is to transition to lead-free aviation fuels for piston aircraft by the end of 2030 without compromising the safe and efficient operation of the fleet and the economic health of the general aviation community.

Key Issues Surrounding this Proposed Finding

High octane aviation gasoline is a vital element of the piston engine aircraft safety system. The 100LL used today has its origins in the development of high-performance, a.k.a. high-compression aircraft engines necessary to enable reliable and economical commercial flight. Lead is used as an additive to create the very high-octane levels required to prevent detonation (engine knock) in high-performance aircraft engines where operation with inadequate fuel octane can result in catastrophic engine failures.

The proposed endangerment finding does not require any action to be taken by, nor does it place any regulatory burdens on airports, local, state, tribal or territorial governments operating airports, pilots, aircraft owners, FBO’s or fuel suppliers.



An EPA proposed endangerment finding is just the first step in a multistep regulatory process under the Clean Air Act. The proposed endangerment finding does not require any action to be taken by, nor does it place any regulatory burdens on airports, local, state, tribal or territorial governments operating airports, pilots, aircraft owners, FBO's or fuel suppliers.

As currently provided in federal law, the proposed finding and any final endangerment finding cannot be used by airport owners and operators of federally obligated airports to impose unreasonable restrictions on, limit the sale or use of leaded fuels at airports, compel practices that degrade aviation safety, or close the airport.

Airports and airport sponsors, as well as service providers, need to facilitate a predictable, safe, and secure transition by ensuring the supply of 100LL is available for aircraft that require 100LL. It cannot be stressed enough to state that having a reliable and predictable network of airports maintaining 100LL fuel during the transition period is critical to providing a safe operating environment for over 220,000 piston-powered aircraft that operate privately and commercially across the U.S.

The GA industry and EAGLE support initiatives to reduce near-term lead emissions at airports by making lower octane unleaded avgas available in a responsible manner, minimizing idling and run-up times consistent with safe operating practices, and increasing distance between run up locations and people on/off airport. The National Air Transportation Association's (NATA) [white paper](#) provides a resource, suggesting four key phases for fuel providers working to offer unleaded avgas in addition to 100LL: Discovery, Preliminary Communications, Infrastructure Considerations, and Final Communications.

Eliminate Aviation Gas Lead Emission (EAGLE)

Aviation and petroleum industry stakeholders and the U.S. government fully support a comprehensive government-industry partnership, with the goal of transitioning to lead-free aviation fuels for piston-engine aircraft by the end of 2030. The EAGLE initiative will help expand and accelerate government and industry actions and investment. In addition, EAGLE is focused on establishing the necessary policies and activities to permit both new and existing general aviation piston aircraft to operate lead-free without compromising safety, or the economic health of the general aviation industry and the public benefits it provides. The EAGLE initiative is conducting activities under four pillars:

- **Regulation, Policy, and Programmatic Activities:** Work is focused on the government policies and processes needed in areas such as lead emissions standards, and infrastructure as well as conducting outreach to industry stakeholders and international partners. This includes support for the EPA endangerment finding process under the Clean Air Act.
- **Unleaded Fuel Evaluation and Authorization:** Work focuses on the testing, evaluation, and qualifications necessary for a viable, safe, high-octane unleaded replacement for 100 octane low lead (100LL) and issuance of an FAA eligible fleet authorization.



Research, Development, and Innovation: Work focuses on research and testing, effective and timely certification of advanced technology designs, and operational procedures to address the technical challenges associated with high-performance engines and unleaded fuels.

- Supply Chain Infrastructure and Deployment: Work is focused on supporting policy and regulatory proposals for maintaining 100LL availability and airport access to ensure safety during the transition and on supporting standards and regulatory pathways to market for the production, distribution, and servicing of the new unleaded fuel, including government incentive and policy programs.

The EAGLE initiative is ambitious and comprehensive with activity under all pillars well underway—

Progress towards Unleaded Replacements for 100LL

There are currently four fuel developers working toward authorization and commercial deployment of high-octane unleaded fuels which are potentially viable replacements for 100LL. Afton/Phillips 66 and Lyondell/VP Racing fuels are working through the Piston Aviation Fuels Initiative (PAFI). General Aviation Modifications Inc. (GAMI) and Swift Fuels are working through the FAA Supplemental Type Certification (STC) process for evaluation and approval, with GAMI recently receiving an FAA issued STC, allowing their 100-octane unleaded fuel (G100UL) to be used in a broad portion of the spark-ignition piston-aircraft fleet.

The status and outcomes of the efforts to obtain FAA authorization and the successful commercial deployment of these high-octane unleaded fuel candidates will be key in achieving a lead-free future by the end of 2030.

To participate in EAGLE and receive routine updates, please send your interest to:
flyeagle2030@gmail.com

EPA/FAA Regulatory Process and Next Steps as prescribed by the Clean Air Act

Step 1: EPA's Endangerment Finding. Under the Clean Air Act, the EPA has the authority to find that a particular air pollutant emitted from aircraft engines "causes, or contributes to, air pollution which may reasonably be anticipated to endanger public health or welfare." This process involves studying the pollutant in question, its sources and quantities, then publishing a proposed finding (which is where we are currently) followed by a potential final finding of endangerment after weighing public comment.



As stated on EPA’s website, “After evaluating comments on the proposal, we plan to issue any final endangerment finding in 2023.” It should be noted that a final finding could be either endangerment or non-endangerment. Assuming the final finding in 2023 concludes that lead emissions from piston engine aircraft does cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare (otherwise known as a *positive endangerment finding*), EPA then moves to a regulatory action in step 2a below.

Upon the finalization of EPA’s positive endangerment finding in 2023, the FAA has an obligation to “prescribe standards for the composition or chemical or physical properties of an aircraft fuel or fuel additive” as described in step 2b below. The EPA and FAA steps outlined in 2a and 2b below will most likely occur concurrently.

Step 2a: EPA’s Aircraft Emissions Standards. Once the EPA determines that a pollutant endangers public health or welfare, it triggers a statutory requirement under the Clean Air Act for EPA to propose and promulgate engine emission standards to address lead pollution from aircraft. The EPA must consult with the FAA to consider technology, safety, and noise when establishing aircraft engine emission standards. The development of these standards will entail another proposed and final rulemaking allowing for public comment and input. It is reasonable to expect this process to take approximately 2 years as there are no lead emission standards currently in place.

Step 2b: FAA’s Fuel Standards. Following a positive endangerment finding by the EPA in 2023 for lead emissions from aircraft piston engines, the FAA is obligated under statute 49 USC 44714 to regulate it both as a fuel component and as a fuel additive. This would be another rulemaking process that will be codified in Title 14 of the Code of Federal Regulations and will take the usual rulemaking steps that would last approximately 2 years.

Under the Clean Air Act, the EPA has the authority to find that a particular air pollutant emitted from aircraft engines “causes, or contributes to, air pollution which may reasonably be anticipated to endanger public health or welfare.” This process involves studying the pollutant in question, its sources, and quantities, then publishing a proposed finding (today) followed by a final finding of endangerment after weighing public comment (2023).

Step 3: FAA’s Certification Standards. Once EPA has promulgated lead emissions standards for piston-engine aircraft, the FAA is responsible for enforcing EPA regulations according to sections 231 and 232 of the Clean Air Act. This is yet another multiyear process involving proposed rulemaking, public comment, and internal government coordination. The publication of a final rule does not in and of itself implement an immediate ban on the use of lead in aviation gasoline; however, it does signal its inevitable and eventual prohibition.