

Safety and environmental questions

<http://www.harp.alaska.edu/harp/faq.html>

Was an environmental impact study conducted on HAARP?

An Environmental Impact Study was conducted during 1992-93 in accordance with the National Environmental Policy Act (NEPA).

Why was an environmental impact study conducted?

The National Environmental Policy Act (NEPA) requires all US government agencies to conduct an environmental impact study prior to beginning construction of any major facility.

What impacts did the study find?

The study concluded, "All of the significant environmental impacts associated with [building and operating the HAARP Observatory at Gakona] can be mitigated to an acceptable level. Some insignificant potential impacts, such as lost habitat, socioeconomic, and wildlife impacts, may not be mitigated."

Who has oversight over HAARP and its operations?

Numerous Federal and State agencies have oversight over one or more aspects of the HAARP Research Station or its operations. There is a [detailed page](#) on our web site describing this oversight.

Is HAARP capable of affecting the weather?

The HAARP facility will not affect the weather. Transmitted energy in the frequency ranges that will be used by HAARP is not absorbed in either the troposphere or the stratosphere - the two levels of the atmosphere that produce the earth's weather. Electromagnetic interactions only occur in the near-vacuum of the rarefied region above about 70 km known as the ionosphere.

The ionosphere is created and continuously replenished as the sun's radiation interacts with the highest levels of the Earth's atmosphere. The downward coupling from the ionosphere to the stratosphere/troposphere is extremely weak, and no association between natural ionospheric variability and surface weather and climate has been found, even at the extraordinarily high levels of ionospheric turbulence that the sun can produce during a geomagnetic storm. If the ionospheric storms caused by the sun itself don't affect the surface weather, there is no chance that HAARP can do so either.

How long do the effects of ionospheric heating last?

Since the ionosphere is, inherently, a turbulent medium that is being both "stirred up" and renewed by the sun, artificially induced effects are quickly obliterated. Depending on the height within the ionosphere where the effect is originally produced, these effects are no longer detectable after times ranging from less than a second to ten minutes.

A good analogy to this process is dropping a stone into a fast moving stream. The ripples caused by the stone are very quickly lost in the rapidly moving water and, a little farther down the stream, are completely undetectable. A University of Alaska, Geophysical Institute scientist has compared HAARP to an "immersion heater in the Yukon River."

Can HAARP create a hole in the ionosphere?

No. Any effects produced by HAARP are miniscule compared with the natural day-night variations that occur in the ionosphere. Several ionospheric layers completely disappear naturally over a whole hemisphere during the evening hours. HAARP can't come close to producing this effect, even in the limited region directly over the site.

Can HAARP create an artificial aurora?

The natural aurora is created when very high energy particles emitted by the sun, reach the Earth's vicinity, are swept toward the Earth's magnetic poles, and collide with gas molecules existing in the upper atmosphere. The energy involved in this process is enormous but is entirely natural and it has been a normal event throughout Earth's history.

HAARP is so much weaker than these naturally occurring processes that it is incapable of producing the type of optical display observed during an aurora. However, weak and repeatable optical emissions have been observed using HAARP (and reported in the scientific literature) using very sensitive cameras.

Are there any health hazards associated with electromagnetic fields produced by HAARP?

The health and safety of the public (and of the scientific researchers who will be present at the site) has been a primary focus in the design of the HAARP HF transmitter and antenna array. There are no locations on-site or off-site where the E-M fields exceed safety standards for RFR exposure as defined by IEEE/ANSI C95.1-1992 and NCRP Report No 86. In fact, the E-M fields measured at the closest public access to the site are lower than those existing in many urban environments.

You mention in your graph and accompanying text that the E-M radiation at the closest public point is 10,000 times below the maximum allowed by the standard. What is the field strength on the site itself?

The only points on the site that approach the EM safety standard are close to or directly under the antenna array itself. Numerous computer simulations, confirmed with measurements during tests show that the highest fields are actually near the edge of the ground screen, about 60 - 80 feet away from the nearest antenna element. A fence around the antenna gravel pad, about 60 feet

farther out than the ground screen (about 150 feet away from the antennas all around), encloses the limited area under the antennas where fields might exceed the standard.

Outside the fenced antenna pad, the fields drop off very rapidly, and are always below the standard. The closest public access point to the facility at the Tok Highway is about 3,000 feet from the antenna fence and the field at this point has decreased to 10,000 times below the safety standard.

Can HAARP be used to generate ELF?

Yes. However, the HAARP facility does not directly transmit signals in the ELF frequency range. Instead, ELF signals are generated in the ionosphere at an altitude of around 100 km. Frequencies ranging from below one Hz to about 20 kHz can be generated through this ionospheric interaction process.

How strong are the ELF signals generated using HAARP?

Under optimum conditions, signals generated using ionospheric interaction techniques may be measured in the tens of pT range and tend to be strongest at frequencies around 2 kHz.

Is there any safety concern with the ELF signals generated using HAARP?

No. These signals are more than eleven million times weaker (smaller) than the Earth's background field and about one million times weaker (smaller) than the level where researchers have reported biological effects in the literature. Signals generated through ionospheric interaction are so weak, in fact, that sophisticated instruments must be used to observe them. Nevertheless, they are still valuable for scientific purposes and for communication applications.

What about radio frequency interference?

Analyses conducted during the environmental impact process suggest that radio frequency interference could occur for receiver systems that operate in the areas surrounding Gakona. However, other facilities using transmitters and supporting diagnostic instruments similar to HAARP, have achieved compatibility with other users of the radio frequency environment. The government is committed to achieve compatibility with other users of the electromagnetic spectrum and an electromagnetic compatibility program has been established to assure this goal is achieved.

The EIS Record of Decision required HAARP to establish a Radio Frequency Advisory Committee. This committee, with representatives from organizations that are users of the HF spectrum has met regularly since 1994 to inform the groups of progress at the facility and to receive their input and suggestions.