

**DRAFT WEATHER MODIFICATION**  
**Frequently Asked Questions**  
**August 31, 2009**

***What is weather modification?***

The term weather modification (also referred to as cloud seeding) has been used to describe:

- Fog suppression (airports)
- Hail suppression (reduce crop and property damage)
- Rainfall enhancement (water supply augmentation)
- Snowpack enhancement (snowpack augmentation)\*

\*The focus of the ESPA Plan Pilot Weather Modification program is enhancing winter **snowpack** through cloud seeding.

***What is the history of weather modification?***

Winter cloud-seeding experiments and operational projects designed to increase seasonal snow-pack storage and subsequent run-off have been conducted in the Western United States since the early 1950s. Cloud-seeding in the West has become commonplace, due to technological advances in the last 20 years. California leads all other states in the number of projects, but cloud-seeding programs also exist in WY, NV, AZ, UT, CO and ID.

***How does cloud seeding work?***

In ‘cold cloud’ seeding the introduction of an ice-forming nucleating agent, e.g., silver iodide, into the appropriate cloud regions causes supercooled liquid water droplets to freeze. Once these droplets freeze, the initial ice grow into snowflakes, falling to the surface as snow if surface temperatures are below or near freezing, or as raindrops at warmer surface temperatures (source North American Weather Consultants NAWC, Inc).

***What determines the effectiveness of cloud seeding?***

The design and implementation of a scientifically based program, taking into account the factors below, addresses most—if not all—potential problems.

- Temperatures,
- Available water vapor,
- Ice nuclei properties,
- Cloud droplet and natural ice distributions

***How do we know weather modification works?***

Trials conducted by various researchers under laboratory conditions have documented the effects of cloud seeding materials. Numerous scientific experiments have been

conducted to investigate/demonstrate the effects produced by cloud seeding in the atmosphere on various cloud types in a variety of climatic regions.

***What about downwind effects?***

The idea that rainfall increases in one area must be offset by decreases elsewhere is a misconception. There are no significant indications of rainfall decreases downwind from any long term cloud seeding projects (WMA).

***What are clouds seeded with?***

Several agents can be used as ice nuclei, with silver iodide being the most common used in commercial cloud seeding.

***Does the silver iodide have adverse effects on humans or the environment?***

No. The concentration of iodine in iodized salt used on food is far above the concentration found in rainwater from a seeded storm. The typical concentration of silver in rainwater or snow from a seeded cloud is less than 0.1 micrograms per litre (one part in 10,000,000,000). Published scientific literature shows no environmentally harmful effects arising from cloud seeding with silver iodide (WMA).

***How are clouds seeded?***

Cloud seeding materials are released via ground-based and/or airborne systems. Specifically, through balloon launches, aircraft seeding and ground-based systems.

***What are the anticipated benefits of cloud seeding?***

- Precipitation increase of 10% from cloud seeding
- Results in approximately 100 KAF of additional Mar – Jul runoff
- Cost effective: Estimated cost per acre-foot of additional water  $\approx$  \$6.50 to \$8.50

***What role is weather modification expected to play in the Idaho ESPA?***

A cooperative five year pilot weather modification project is underway with the Idaho Power Company with the aim of increasing winter snowpack in the Upper Snake River Basin and potentially the Wood River System.

***How does the ESPA Plan program fit with the existing efforts by Counties and Cities in eastern Idaho?***

Close coordination and enhancement through meteorological support, additional ground-based generators etc...