

# 8 Chemicals Used in Artificial Rain – Cloud Seeding

- Post authorBy [dwipurwa](#)
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In the time where climate is unpredictable, several pattern of season are messed up. While in the past rain and dry season are usually periodic in constant cycle, especially in equator line, nowadays, either of the two can stay longer than its usual period. This causes several abnormalities, for example, longer period dry season or el nino can cause critical source of water.

During abnormal dry season, the amount of evaporation is bigger than precipitation. As a result, the frequency of rain decreases as well as the water supply. When there is a lack of water, problems like dehydration, sanitation, to industry supply will surface. As technology is advanced, now people can create artificial rain by adding some chemicals to seed the cloud. What are those chemicals? Here is the list of chemicals used in artificial rain.

## 1. Silver Iodide

The main compound of cloud seeding for artificial rain is silver iodide. Silver iodides are [examples of inorganic compounds](#) with chemical formula AgI. Silver iodide is a highly photosensitive as a reaction of iodide solution with silver ions. The chemical has yellowish color and the solid form of it can precipitate quickly. Silver iodide acts as trigger or hook for the seeded cloud to precipitate. The chemical blends with the cloud and induce the freezing cloud to release it in the form of water. With such function, silver iodide is a chemical used in artificial rain.

## 2. Potassium Iodide

Another chemical needed in cloud seeding to create artificial rain is potassium iodide. Potassium iodide is similar to silver iodide except for the fact that potassium iodide is not only for artificial rain but also for other uses. People used potassium iodide as a shield against nuclear radiation in Chernobyl incident. It is also effective to protect some of human's internal organ. In cloud seeding, potassium iodide functions as photosensitizer in the [application of photochemistry in modern life](#) with silver nitrate. It is also the chemical that forms silver iodide with nitrate as combination. Because of its function, it is used to make artificial rain as well.

## 3. Carbon Dioxide

Carbon dioxide in the form of dry ice is also important in the making of artificial rain. This chemical is a colorless gas with chemical compound CO<sub>2</sub>. While carbon monoxide is carbon atom that bonds only with one oxygen atom, carbon dioxide bonds with two atoms and is not as dangerous as monoxide one. When it is in the form of ice, carbon dioxide will help to weigh down the clouds and press the trapped

water to fall down to surface of the earth. Dry ice is not similar to ordinary ice so it functions purely as additional weight to the cloud and does not contain water. (Related to: [Chemicals in Water](#) supply).

#### **4. Propane**

Propane is an alkane compound with three carbon atoms. It has the chemical formula of  $C_3H_8$ . Propane is a common substance used as fuel is a natural gas that often is colorless but under certain circumstance can turn into liquid form. Propane gas as cloud seeding material acts as a pusher to encourage the clouds to precipitate. The liquid form of it will also trigger the clouds to release a liquid form of itself, further cause rain. Propane needs other chemical to be able to properly run its function in cloud seeding. Regardless, propane is important in the process of artificial rain.

#### **5. Calcium Carbide**

During agitation state calcium carbide is used in the making of artificial rain. Calcium carbide along with calcium oxide acts as absorbers of water vapour. It consists of salt and urea or ammonium nitrate. This chemical is a calcium compound with formula  $CaC_2$ . It is usually colorless but can also appear white-ish. To produce calcium carbide, lime and coke mixture in an electric arc furnace reaction will result in calcium carbide. Furthermore, the role in artificial rain is to trigger precipitation in the sky clouds.

#### **6. Ammonium Nitrate**

Another chemical involved in cloud seeding is ammonium nitrate. Ammonium nitrate is the nitrate salt of ammonium cation with chemical formula  $NH_4NO_3$ . Appear in crystal white solid form, ammonium nitrate commonly used as fertilizer in agriculture. However, this chemical also plays role in the cloud seeding process to create artificial rain. Along with other chemicals, ammonium nitrate acts as the one that increase nuclei and to increase the density of the clouds as well. Nuclei is beads of water contained in the clouds that should fall as rain. With such function, ammonium nitrate is among the chemicals used in artificial rain.

#### **7. Sodium Chloride**

Alternative chemical beside silver iodide to create artificial rain is sodium chloride. Sodium chloride is a chemical compound with formula  $NaCl$ . The formation of sodium chloride is one portion of sodium and one portion of chloride. Commonly known as salt, it is an ionic compound that can also acts as denser in artificial rain making. The chemical will make the cloud dense with big beads of water, further pushing them to create precipitation and drop rain onto the earth's surface. The use of it is considered to be more expensive compared to silver iodide and is only used occasionally during extreme dry season. To know more about its use, read [Sodium Chloride Uses](#).

#### **8. Urea Compound**

Another chemical that usually utilized in agriculture but is also able to help in cloud seeding is urea. Urea compound is also known as carbamide with chemical formula  $CH_4N_2O$ . The chemical comes with white solid appearance that is often used as plants fertilizer. In cloud seeding, urea acts as the one that absorb the water vapour. As a result, it will create a more dense cloud to break down the super cool

clouds. Moreover, it also stimulates the formation of water mass from crystallized water in the clouds. Thus, urea is also chemical used in artificial rain.

Artificial rain is now a common one resulted from cloud seeding to trigger rain in places that have not received any rains in a long period of time. Although there is a discussion about the harm of chemicals used in artificial rain, this method is effective enough and is trusted by many countries to save the climate. Indeed, there are 8 list of chemical used in artificial rain you should know.

Read also: [Sodium Nitrate Common Uses](#) You Should Know.

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