



Metaldehyde – a solid fuel mutates to a modern production tool in agriculture

Metaldehyde was first discovered and described by the German chemist Justus von Liebig in 1835. At the beginning of the year 1920 Lonza started the world's first industrial production of metaldehyde, later known under the brand name Meta™. In those days it was used as solid fuel for all kind of indoor and outdoor needs and became very popular in camping.

At the end of the 1930-ies the molluscicidal activity of metaldehyde was discovered accidentally. It is told that dead slugs and snails were found on and around metaldehyde tablets spilled on the ground by campers having used them as solid fuel. In its publication of June 1937 in the Journal of the Ministry of Agriculture (UK), Gimingham and Newton wrote:

“In the course of the past years, several letters have appeared in the horticultural Press* stating that good results have been obtained by the use of a new type of poison bait for destroying slugs and snails. This consists of a mixture of bran and “Meta”, a solid fuel sold for heating small domestic appliances and for similar purposes.”

The production of solid fuel tablets was ended in 1983, whereas today, metaldehyde containing pellets are the most-used slug and snail control agents in the world. For farmers and horticulturists it is the most important tool in preventing slug and snail damage on their plants and crops, as well as in home and garden. Slugs are important pests in cereals, oilseed rape, grassland, potatoes and rice cultures by eating the seedlings in a very early stage that can destroy a fresh planted field within some days. Slugs and snails are also pests in special crops such as vegetable crops, lettuce, strawberries and ornamentals ruining the quality of these products by feeding damages and contaminations of mucus and feces. Also in areas with dryer climates, snails can become major pests, e.g. in citrus cultures. The main areas for slug and snail pests are in Europe, the Americas and Asia.

Another major field where snails play an important role is in acting as alternate/intermediate hosts of various diseases such as schistosomiasis (in other areas

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also known as bilharzia, bilharziosis or snail fever). This disease is caused by parasitic species of fluke (flatworms) of the genus schistosoma. Schistosomiasis is the second most socio-economically devastating parasitic disease after malaria and is mainly found in Asia, Africa, and South America. For control of these slugs a special liquid formulation of metaldehyde in water was developed. The formulation, branded as Meta-Li™, is used as spray formulation to substantially reduce the snails of the river banks to interrupt the lifecycle and thus preventing the spreading of the disease.

Further application fields for metaldehyde-containing formulations could be the control of molluscs in water ponds, e.g. in shrimp and fish farms or in invasive species prevention to decontaminate goods (e.g. tiles, plants), containers or other transport vehicles. Treatment with metaldehyde-containing formulations before transport or in quarantine may help to prevent unintentional intercontinental spreading of slug and snail pests by transport.

The strength of metaldehyde is its combination of efficacy, specificity and a favorable environmental profile.

Efficacy: Already small amounts of the molecule cause an excessive mucus release by the mucus cells of the slugs and snails. This results in an immediate loss of water and energy and in an irreversible destruction of the mucus cells of the skin and the gut, causing the death of the animal within a few hours. In agriculture the fast and accurate action of metaldehyde-containing pellets makes them a preferred slug control tool.

Specificity: The special mucus cells of slugs and snails form a special and important part of the physiological structure specific for molluscs. This mode of action is very specific, therefore as different scientific studies confirm metaldehyde does not harm beneficial insects and animals such as bees, beetles, earthworms, hedgehogs, amphibians, birds, mammals and water life. Also, there is no impact on wildlife and soil microorganisms and there is no phytotoxicity.

Good environmental profile: In soils, metaldehyde completely and naturally degrades within a few days to carbon dioxide and water via acetaldehyde and does not accumulate in soils. As a pure carbohydrate it gets metabolized by organisms and also does not accumulate in plant and animal tissues.

Having these positive properties, metaldehyde fits well in integrated production management systems and is recognized in the market for this.

In recent years, Lonza has worked systematically on the improvement of metaldehyde pellets and formulations to improve their efficacy in slug control and to improve their environmental profile as well as the safety of metaldehyde slug and snail pellets. For this purpose a special Quality Assessment Program was established not only to monitor the quality of marketed pellets but also to find new innovative products.



The Meta™ brand and logo of Lonza's metaldehyde indicates quality products and is well known among farmers and plant protection specialists.

Also in future, metaldehyde will continue to remain a major and an important product for Lonza by maintaining its strong position in molluscicide markets all over the world.

*[Gardening Illustrated, May 2, 1936 and Gardeners' Chronicle, Dec. 19, 1936; Jan. 23 and 30, 1937]