



Ammonia Emission from Fertilizer

By Dr. Tom Bruulsema, CCA

Nobody likes smog.

Smog adversely affects health, particularly for people susceptible to asthma. In both Canada and the United States, governments are supporting science studying its causes.

Most people associate the causes of smog with industries and vehicles.

It is true that the oxides of sulfur and nitrogen emitted from smokestacks and tailpipes are major causes of smog. However, such emissions have declined in recent decades, and more attention is now being paid to other sources. Ammonia is potentially one of the partial causes.

Agricultural ammonia may cause smog.

It has been shown that under certain conditions, ammonia can enhance the formation of particulate matter — the main component of smog — from the oxides of sulfur and nitrogen. What as yet is unknown is whether agriculture emits ammonia at rates and times in which the “certain conditions” occur. Agriculture uses large

amounts of ammonia in the form of fertilizers, and livestock and poultry operations emit large amounts as well.

Crop advisers and producers know about the risks of ammonia losses.

They know that to get good efficiency from ammonia-based fertilizers, losses must be minimized. Such losses waste money, can harm seedlings, and limit profitability. When fertilizers are applied at the right rate, time and place, ammonia converts to plant-available forms — retained in the soil until the crop takes them up — rather than escaping to the air. Losses reduce efficiency.

Ammonia emission is an international issue.

The Gothenburg Protocol obligates European countries to report their ammonia emissions, and make information widely available to the public on good agricultural practices to reduce emissions. The need to report is important in North America as well.

Accountability must increase.

Both agricultural producers and the crop inputs industry will need to be more accountable about managing emissions. Detailed information on fertilizer management practices — including sources, rates, timing and placement — may someday be required by regulation, unless industry associations generate credible information on a voluntary basis.

Fertilizer use efficiency improvements need to be made known.

North American crop producers manage fertilizers much more efficiently today than 30 years ago. The improving trend continues to minimize multiple impacts on the environment. The crop nutrient industry seeks to work with crop producers to communicate these improvements to the public. The Crop Nutrients Council in Canada and the Nutrients for Life Foundation in the United States are two excellent examples of such efforts.



For copies of this article and a complete catalogue of previously published columns, check our website www.ccaontario.com under the "Growers" tab.



Tom Bruulsema is a Certified Crop Adviser employed by the International Plant Nutrition Institute as their Northeast Director located in Guelph.

There are over 500 Certified Crop Advisers (CCA) in Ontario. Each CCA has demonstrated their knowledge about Ontario crop production by passing the required exams. In addition, they have the crop advisory experience, the education, the commitment to continuing education and have signed a comprehensive code of ethics, which places the grower's interests first.

This industry driven program helps ensure that Ontario crop producers are well served by those providing their crop production advice. This article was written by one of those CCA's.