Tuesday, 6 December 2005 – 7:30 pm – 9 pm – Kazan River

Knowledge transfer to reduce GHG emissions – lessons from the fertilizer industry

Introduction by Gilles Payette, President, Yara Canada L.P.

Ladies and Gentlemen,

Good evening and thank you for joining us for this side event. We have an excellent program and we hope you can join us for some refreshments following the event.

The global fertilizer industry makes food for plants. We provide farmers with four major crop nutrients: nitrogen, phosphorous, potash and sulphur. Potash and phosphate are both minerals mined from the earth. Nitrogen fertilizers are derived by combining air with hydrogen, most commonly from natural gas. Sulphur is also a mineral found in conjunction with natural gas and petroleum. In addition, our industry includes producers of micronutrients, soil amendments and organic fertilizers.

Ammonia is the basic building block for all nitrogen fertilizers. When speaking of climate change in the context of the fertilizer industry, we often focus on ammonia production, because it accounts for some 94% of all energy consumed by our sector as well as for the vast majority of carbon dioxide emitted during the fertilizer manufacturing process.

Geographically, the fertilizer industry spans the globe. The International Fertilizer Industry Association (IFA) maintains statistics on fertilizer production in 87 countries. Our products are used in virtually every country, and international statistics are maintained on consumption in 115 nations. Historically, the origin of the fertilizer industry is in North America and Europe. In recent decades, there has been a dramatic shift in fertilizer production toward developing countries. Asia alone now accounts for some 40% of global fertilizer production.

As a result, trade is the backbone of fertilizer production and use. Fertilizers rate fourth in terms of dry bulk volume, following iron ore, coal and grains. Most fertilizers are commodities, and variations in regulations from one country to another may create advantages and disadvantages for specific fertilizer-producing countries in global fertilizer markets. At this time, only some 31% of global ammonia production occurs in

the countries listed in Annex 1 to the United Nations Framework Convention on Climate Change.

For the Canadian fertilizer industry, the impact of the Kyoto Protocol on trade matters is paramount because Canada is a fertilizer exporting country (75% of our production is exported) and we compete for investment and for markets with non-Annex 1 countries. This is one of the reasons why the Canadian Fertilizer Institute is co-hosting this evening's event.

As a general rule, production facilities in North America and Europe are very efficient, both in economic and environmental terms. Fertilizer production in North America and Europe has already undergone significant modernization and rationalization. In fact, Canadian nitrogen producers rank #1 in the world for energy efficiency. But we should also acknowledge that the developing world has made significant progress as well. Some of the newest and most efficient plants in the world have been built in developing countries in recent years.

We will hear more about this in our first presentation today, but let me leave you with a few numbers to illustrate the point: IFA currently counts about 450 organizations among its members. In China alone, there are some 1600 fertilizer producers. Many of these production sites use inefficient technologies, including “ABC” or ammonia bicarbonate plants from the 1940s, which will most likely be removed from production or replaced by more efficient and highly mechanized plants as China's fertilizer industry modernizes in coming years. However beneficial such a restructuring might be for the environment, it could displace as many as 900,000 workers. This reflects just one of the complexities of technology transfer.

The fertilizer industry has first-hand experience transferring the technologies and the knowledge related to fertilizer production to developing countries. Because of the intimate link with food production, fertilizer production has held a privileged place in the economic development strategies of numerous governments. Our second paper this evening will look at the lessons that have been learned by some four decades of experience transferring fertilizer production technology.

Because the importance of soil nutrients for plant growth only began to be understood in the 19th century, many fertilizer companies have historically carried out agricultural research to discover the best products for crop use. When it became a social imperative in the 1960s to overcome food shortages globally, the fertilizer industry worked with international bodies, such as the Food and Agriculture Organization, to disseminate information about how to use fertilizers in order to increase agricultural yields. As time has passed, such agronomic recommendations have incorporated a wider number of considerations, including how to maximize yields while minimizing unwanted impacts on the environment.

In countries such as Australia, Canada, South Africa, the United Kingdom and the United States, such advice may be given by certified crop advisors paid by farmers themselves. In many developing countries, extension officers are paid by the state or

donors. However, the resources available to spread best management practices are insufficient to reach all farmers, especially given the varied conditions under which they work and the different levels of management tools available to them.

The second half of our programme will look at the links between farming practices and climate change as related to fertilizers. Good nutrient management practices can, in fact, reduce direct emissions of gases from farmers' fields, including losses of N_2O, a powerful greenhouse gas. Efforts to increase the organic matter in soils can help mitigate climate change by capturing and sequestering carbon, which is part of the soil's basic chemical structure. I would also like to mention that building up the nutrient content and soil organic matter of depleted soils is an important element of the fight against desertification. Although this topic will not be discussed here tonight, there are materials available on the documentation table for those of you who would like to learn more about this.

Our third speaker this evening will look at the challenge that farmers face in carrying out site-specific nutrient management. On the one hand, they need to meet a number of economic imperatives and act as good environmental stewards, which means at worst having a neutral impact on the environment. However, in many cases, farmers can actually have a positive influence on the environment, as is the case in agricultural carbon sequestration. The farmer's job is complicated by the changing context in which they work. As well as meeting growing demands from society on how they go about their business, farmers are increasingly forced to adapt to the early impact of climate change. More than almost any other livelihood, farming is dependent on nature and the environment for its primary resource base.

Finally, we will end our formal presentations with a look at the challenges involved in making sure best management practices are used by farmers. Farmers need the right incentives to change their way of working. And once they are motivated, they need access to adapted tools and technologies. Our last speaker will show that this is easier said than done even in Canada, which has a good infrastructure for transferring knowledge to farmers, without even mentioning countries where limited access to information, modern farm practices and technologies is a major hurdle for farmers.