

**Acceptable P Levels in Soils and Impact on the Risk of P Transfer
from Manure Amended Soils to Surface Waters**

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According to a recent study completed by Manitoba Conservation, there are increasing concentrations of P in the rivers draining major watersheds in Southern Manitoba. Agriculture has been suggested as one contributor to the P loads that reach water bodies, particularly from diffuse sources. Manure P has been identified as a significant source of soil P enrichment in areas of high density of confined livestock operations. Some of this phosphorus may reach important water bodies such as Lake Winnipeg.

Recent literature reviews have identified that the evaluation of the potential for P contamination of surface waters by agricultural sources requires detailed information about many factors. Such factors include the terrain attributes involved in the risk of overland or subsurface transport of P, the amount of P available from all sources and their modes of application on agricultural land.

However, most of the information on P behaviour and transfer has been developed for areas in which soils are dominantly acidic and where transport is dominated by overland processes (erosion and surface runoff). This information may not be pertinent to Manitoba because it is dominated by calcareous soils and where a significant part of the agricultural land base is relatively flat. Also, regulations and codes of practice have been proposed and/or adopted to limit the risk of transfer of agricultural soil P to water bodies in many jurisdictions. These strategies should be assessed for their adaptability to Manitoba conditions. The “state of the art” information that is available should be summarized and gaps in knowledge identified in order to develop sound regulatory or codes of practice and to evaluate the potential impact of those practices on Manitoba’s agricultural industry.

In response to these challenges, the Manitoba Livestock Manure Management Initiative (MLMMI), Manitoba Rural Adaptation Council and the Manitoba Conservation Sustainable Development Innovations Fund have sponsored a study to review and adapt the bodies of existing knowledge on the role and fate of phosphorus in livestock and crop production systems specifically relevant to Manitoba. The first phase of this study will identify gaps in knowledge and briefly describe what should be done to fill in those gaps in the following areas:

1. Amounts of phosphorus discharged to the environment from agriculture (including livestock and crop production) and other users of land and water.
2. Methods of reducing phosphorus contribution from animal agriculture in Manitoba, including reduction of excreted P and manure treatment.
3. Impact of soil type, P management, landscape and climate on P retention and release from soil to water.
4. Legislation and regulation regarding P management in other jurisdictions.

The report on the study’s first phase will be completed at the end of April, 2003; therefore, the presentation at this workshop will be preliminary. The final report will be posted on the MLMMI website (<http://www.manure.mb.ca>) later this spring.