

Point source pollution of surface water with pesticides from open field crops: risks and solutions

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ABSTRACT

In several European countries point source pollution of pesticides was found to cause a substantial or even major part of the total emission of pesticides to surface water. It is not known which part of the water quality standard exceedances in the Netherlands is caused by point source pollution. However, questionnaires on farmer behaviour and farm yard setup combined with measurements of volumes and contamination of water flows, show a frequent risk for point source pollutions causing standard exceedances. In recent international projects like TOPPS (Train the Operators to Prevent Pollution from Point Sources) the main focus has been on losses during loading and cleaning of spraying equipment. These are expected to be the most relevant point emission pathways for open field crops at European scale. In the Netherlands several measurements of external contamination of sprayers were carried out to get an broad view of the contamination of sprayers. The load was smaller than what was expected on the basis of a literature review (Van de Zande, unpublished), but large enough to be a potential cause of standard exceedance.

Point source pollution does not only evolve in direct relation to application of pesticides in the field. Treating planting material, and processing and storage of harvested products can also be an important source of point source pollution.

Generally, point source emissions have in common that they involve a water flow, contaminated with pesticides. Solutions can be directed at minimalizing the load of pesticides in the waste water or relocating processes from a high to a low risk location. If relocation to the field is not possible or desirable, processing the water for further recycling or a safe discharge is a final solution. Experiments with water from cleaning sprayers, condensator water from cold storage of flower bulbs and water from fruit sorting show that water treatment through bioremediation (Wenneker *et al*, 2010), as well as physical-chemical solutions like oxidation and activated carbon filters can be an effective and practical solution.

References

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