

Follow-up advisory report on crop protection and local residents

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Executive summary

Health Council of the Netherlands



As a follow-up to the Health Council of the Netherlands' 2014 advisory report on the health risks posed by the use of plant protection products to those living in the vicinity of agricultural land, a major exposure study (Research on exposure of residents to pesticides in the Netherlands, or OBO) and a health survey were carried out. At the request of the Minister for Medical Care and Sport, the Minister of Agriculture, Nature and Food Quality, and the State Secretary for Infrastructure and Water Management, the Health Council is once again issuing an advisory report on the current state of knowledge concerning the health risks of exposure to plant protection products. The members of the government specifically asked whether additional research is needed to gain an insight into these health risks, whether the approval procedure for plant protection products needs to be modified, and whether there is a relationship between the use of plant

protection products and Parkinson's disease. A new committee, whose members are experts in the relevant fields, has addressed these questions.

Research indicates that plant protection products do pose health risks

The international epidemiological literature indicates that the use of chemical agents for plant protection can be associated with impaired human health. For instance, links with Parkinson's disease have been found. A link has also been found between prenatal exposure to plant protection products and developmental disorders in children. In such studies, however, the measurements of exposure are often inaccurate. As a result, little is known about the exact level of risk involved, and about which plant protection products are responsible. Experimental animal studies and research into mechanisms of action have produced evidence

that links between exposure to plant protection products and Parkinson's disease and developmental disorders in children are plausible.

While recent Dutch studies have not yielded any clear evidence of health effects, this has done nothing to allay these concerns. These Dutch epidemiological studies are limited in scope. Furthermore, the weak evidence of effects in some of these studies is in line with findings in other countries. In the Committee's view, the conclusion that exposure to chemical plant protection products poses a health risk is justified. However, the level of risk associated with current Dutch agricultural practice is unclear. What is clear is that, on average, local residents – especially growers and their families – are subjected to greater exposure than those who do not work in agriculture, and who live further away from agricultural land. To what extent this poses a greater health risk to these



population subgroups in the Netherlands remains uncertain.

Approval procedures can never fully eliminate risks

Before they can be used in practice, plant protection products must undergo an extensive approval procedure (based on European legislation), which includes the assessment of health risks. This is based on a conservative exposure estimate and on health-based limit values derived from experimental animal studies. Since 2014, the procedure has included a separate assessment of the risks posed to non-occupational bystanders and to those living in the vicinity of agricultural land. However, an approval procedure can never fully eliminate the risk of health impairment. The procedure is known to suffer from the shortcoming that it does not adequately cover the risks to unborn children and young children. The same applies to neurological disorders that occur later in life, such as Parkinson's disease. Nor can the current procedures accurately assess the risks

of exposure to a single substance from several different sources, or those posed by simultaneous exposure to more than one substance.

Enhancing sustainability is progressing slowly, and there is too little emphasis on safe working practices

Various laws and rules set out regulations for the safe use of plant protection products in everyday practice. In addition, information is provided and various government agencies carry out inspections. The government endeavours to reduce our dependence on chemical agents and to replace those that have high acute toxicity with less toxic alternatives. A recent policy review showed that these efforts to enhance sustainability have not, as yet, been particularly successful. Moreover, it has been found that growers do not consider safe working practices to be a priority. In addition to impacting their own safety and that of their employees and family members, this also poses increased risks to local residents.

Recommendations

Apply the precautionary principle – intensify the pursuit of sustainability

The Committee does not expect further epidemiological health research to clarify the health effects of plant protection products in the near future. This is especially the case for chronic health effects that only manifest themselves in later life. The approval procedure needs to be improved, but that is a complex undertaking and will take a great deal of time. For that reason, the Committee advocates application of the precautionary principle. In particular, it recommends that efforts to render crop protection more sustainable should be continued and intensified. The guiding principle here is to aim for the lowest possible exposure to chemical plant protection products. Where the use of these substances is unavoidable, the least harmful variant should be selected. Strict compliance with regulations is required. There is an ongoing need for education and enforcement. It is recommended that both of these strands should be enhanced.



Health research

In the long run, the Committee believes that additional epidemiological health research is likely to generate valuable insights. This is conditional on the researchers' ability to accurately determine people's exposure to chemical plant protection products. For example, the Committee feels that it might be feasible to set up a prospective cohort study into developmental effects in children. That would involve monitoring a group of children for an extended period of time.

Monitoring use and exposure

The Committee recommends that efforts should be made to monitor use and exposure more effectively. This would spotlight the effectiveness of policy aimed at reducing the use of chemical plant protection products. In the longer term, the data obtained could be used to enhance health research.

- The Committee recommends that the plant protection monitor be expanded and transformed into a reliable, uniform, national

registration system for the use of chemical plant protection products by growers, at the level of individual agricultural plots.

- The Committee also recommends that a biomonitoring programme be established, to periodically measure human exposure. Such testing would be based on the presence of metabolites in urine, for example. This reveals an individual's total exposure to specific chemicals, from different sources and via various routes. Biomonitoring can also help to make growers more aware of the risks involved. Indeed, if biomonitoring were to be implemented simultaneously in several European states, this would ultimately provide a reliable picture of exposure. It would also reveal any spatial and temporal variation within this overall picture. Furthermore, this body of information could ultimately be used to enhance epidemiological research and to more accurately assess the health risks involved in the Dutch situation.
- The exposure study in the bulb cultivation sector has led to a better understanding of

the relative importance of the various routes by which local residents are exposed. It is recommended that checks be carried out to determine whether these findings are representative of other crops. In particular, the fruit cultivation sector, where plant protection products are sprayed sideways and upwards. Research into the effectiveness of measures to control emission and exposure is also useful.

Improving the approval procedure

The Committee recommends that further international efforts be made to improve the approval procedure. In particular, this should involve the assessment of potential effects on brain development in unborn children and young children, and the risk of neurodegenerative disorders, such as Parkinson's disease. In any approval system for individual products, it is difficult to allow for the risks arising from exposure to substances from different sources or from combinations of substances. The Committee takes the view that a pragmatic solution would



be to introduce an additional safety factor ('allocation factor'). The purpose of this factor (whose magnitude is yet to be determined) is to reduce the risk of health impairment posed by combined exposure to substances from different sources and routes (work, environment, diet, private use) and to combinations of plant protection products. The Committee recommends that, within the wider context of the EU, the Netherlands should actively endeavour to introduce a factor of this kind into the approval procedure.

Encourage collaboration

Finally, the Committee recommends that stakeholders should be encouraged to exchange knowledge and views, and to collaborate with one another. Subject to certain conditions, it might be helpful to establish a knowledge platform for this purpose. A platform of this kind could enable the parties involved to cooperate with experts in the implementation of a biomonitoring programme, for example.



The Health Council of the Netherlands, established in 1902, is an independent scientific advisory body. Its remit is “to advise the government and Parliament on the current level of knowledge with respect to public health issues and health (services) research...” (Section 22, Health Act).

The Health Council receives most requests for advice from the Ministers of Health, Welfare and Sport, Infrastructure and Water Management, Social Affairs and Employment, and Agriculture, Nature and Food Quality. The Council can publish advisory reports on its own initiative. It usually does this in order to ask attention for developments or trends that are thought to be relevant to government policy.

Most Health Council reports are prepared by multidisciplinary committees of Dutch or, so-metimes, foreign experts, appointed in a personal capacity. The reports are available to the public.

This publication can be downloaded from www.healthcouncil.nl.

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