



European Union Network for the Implementation  
and Enforcement of Environmental Law

# Reducing pesticide residues in ground- and surface waters

*A comparison of measures and instruments used in Belgium Flanders,  
England, Ireland, Netherlands, Scotland and Sweden*

***Date of report: 2017-02-15***

***Report number: 2016/13***



## Introduction to IMPEL

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) is an international non-profit association of the environmental authorities of the EU Member States, acceding and candidate countries of the European Union and EEA countries. The association is registered in Belgium and its legal seat is in Brussels, Belgium.

IMPEL was set up in 1992 as an informal Network of European regulators and authorities concerned with the implementation and enforcement of environmental law. The Network's objective is to create the necessary impetus in the European Community to make progress on ensuring a more effective application of environmental legislation. The core of the IMPEL activities concerns awareness raising, capacity building and exchange of information and experiences on implementation, enforcement and international enforcement collaboration as well as promoting and supporting the practicability and enforceability of European environmental legislation.

During the previous years IMPEL has developed into a considerable, widely known organisation, being mentioned in a number of EU legislative and policy documents, e.g. the 7th Environment Action Programme and the Recommendation on Minimum Criteria for Environmental Inspections.

The expertise and experience of the participants within IMPEL make the network uniquely qualified to work on both technical and regulatory aspects of EU environmental legislation.

Information on the IMPEL Network is also available through its website at: [www.impel.eu](http://www.impel.eu)



<p><b>Title of the report:</b></p> <p>Reducing pesticide residues in ground- and surface waters</p>	<p><b>Number report:</b></p> <p>2016/13</p>
<p><b>Project Manager/Authors:</b></p> <p><b>Ann-Karin Thorén</b></p>	<p><b>Report adopted at IMPEL General Assembly Meeting:</b></p> <p>Date and location</p>
	<p><b>Total number of pages: 19</b></p> <p>Report: 13</p> <p>Annexes: 2</p>

**Executive Summary**

The balance between a competitive agricultural production and the protection of water ecosystems is a concern for the EU member states. Member states have agreed on the Common Agricultural Policy (CAP) and a framework for community action in the field of water policy within the Water Framework Directive (WFD) including the Drinking Water Directive (DWD) and the Sustainable Use of Pesticides Directive (SUD).

The aim of the project has been to compare measures and instruments that are used in order to reduce pesticide residues in ground- and surface water in 6 EU member states. This was done by constructing a matrix with separate work sheets for measures and instruments implementing SUD, DWD and WFD respectively.

All countries have adopted the Action plans according to SUD. All countries have developed indicators in order to assess the progress of the measures in the Action plan, however variously. It could be an area for further in-depth comparison for future work within this project.

There are differences in the implementation of measures and instruments in safe guard zones implementing drinking water protection according to article 7 WFD. In England measures applied in safe guard zones are voluntary; in Sweden they are obligatory, however not covering all protected areas for drinking water supply.

It has been nice and valuable to meet the project participants and exchange knowledge and experiences. We initially anticipated the scope of comparing measures for reducing pesticide residues in water as quite limited. However it turned out to be obvious that more time would be needed to get an in-depth comparison.

**Disclaimer**

This report is the result of a project within the IMPEL network. The content does not necessarily represent the view of the national administrations or the Commission.



# TABLE OF CONTENTS

---

<b>1. THE PROJECT (BACKGROUND)</b>	<b>6</b>
1.2 Aim of project	7
1.3 Participants	7
<b>2. RESULTS</b>	<b>10</b>
2.1 The first meeting	10
2.2 The second meeting	12
2.3 The Matrix for comparing measures and instruments	12
2.4 Summary of comparison; similarities and differences	12
2.4.1 Similarities	12
2.4.2 Differences	13
<b>3. CONCLUSIONS</b>	<b>14</b>
<b>4. RECOMMENDATIONS</b>	<b>14</b>
<b>ANNEX I. MATRIX, EXAMPLE</b>	<b>16</b>
<b>ANNEX II. LINKS TO MORE INFORMATION</b>	<b>20</b>



## 1. The project (background)

The balance between a competitive agricultural production and the protection of water ecosystems is a concern for the EU member states.

Member states have agreed on the Common Agricultural Policy (CAP) and a framework for community action in the field of water policy within the Water Framework Directive (WFD) including the Drinking Water Directive (DWD) and the Sustainable Use of Pesticides Directive (SUD).

The implementation of the WFD has been running for the first management cycle and according to assessment reports from the EU commission, there are varying implementation gaps in member states. These gaps are depending on variations in natural prerequisites, national legislation and organizational context.

Instruments for achieving sustainable use of pesticides are for example voluntary agro-environment commitments funded within Rural Development Programs (RDP:s) within the CAP and regulatory minimum requirements of cross compliance and basic measures according to WFD. Basic measures within the River Basin Management Plans and Program of Measures are measures and instruments implementing the Drinking Water Directive and the Sustainable Use of Pesticides Directive.

In order to investigate variations in implementation, a project called Reduce Pesticides in Water (ReduPiWa) has been running within the Network for the Implementation and Enforcement of Environmental Law during 2016.



## 1.2 Aim of project

The aim of the project was to compare measures and instruments that are used in order to reduce pesticide residues in ground- and surface water. Initially, when the call for participation was sent via the network of IMPEL and the web platform Basecamp, some specific issues were raised as suggested for comparison. Depending on the interest of the respective participating country, organization and person, these specific issues was supposed to be modified or complemented at the first meeting. The initial plan was:

- Meeting 1 and 2) Discuss and compare
  - Basic and supplementary measures in River Basin Management Plans
  - Cost of measures covered by Rural Development Plans
  - Methods and tools for risk assessment
  - Principles for sharing costs of monitoring of pesticide residues
- Meeting 3) Report comparison, planning study visit and work shop in Sweden 2017

Eventually this plan was somewhat modified during the project process. This will be explained further below.

## 1.3 Participants

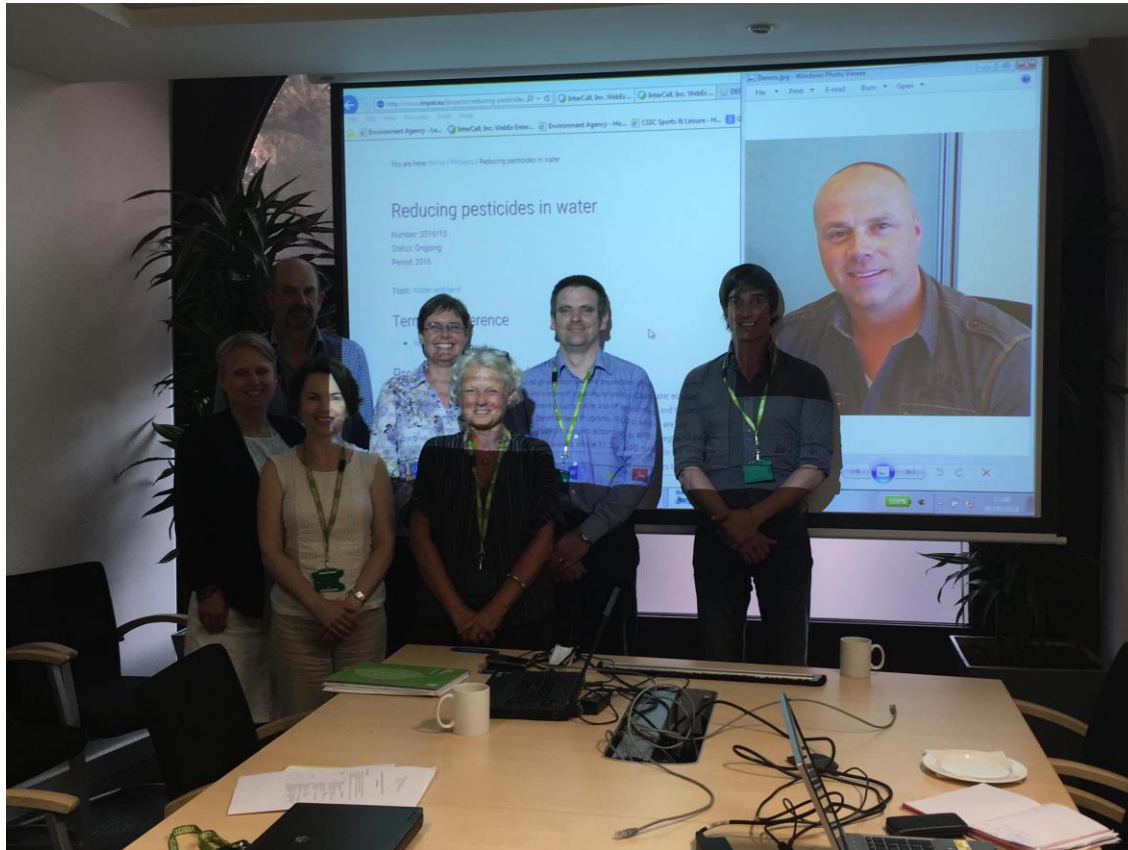
During 2016 the following persons have been participating in the project.

Name	Organisation	Country, region	Present work tasks and background
Christophe Bervoets <a href="mailto:christophe.bervoets@lne.vlaanderen.be">christophe.bervoets@lne.vlaanderen.be</a>	Department of Environment, Nature and Energy	Flemish Government, Belgium	Inspection, SUD
Darrell Crothers <a href="mailto:Darrell.Crothers@sepa.org.uk">Darrell.Crothers@sepa.org.uk</a>	Scottish Environment Protection Agency	Scotland	WFD, agriculture including pesticides



Dennis Kalf <a href="mailto:dennis.kalf@rws.nl">dennis.kalf@rws.nl</a>	Rijkswaterstaat; Ministry of Infrastructure and the Environment	The Netherlands	SUD, environmental aspects pesticides
Emer Cooney <a href="mailto:e.cooney@epa.ie">e.cooney@epa.ie</a>	Environmental Protection Agency	Ireland	Drinking water
Jon Gulson <a href="mailto:jon.gulson@environment-agency.gov.uk">jon.gulson@environment-agency.gov.uk</a>	Environmental Protection Agency	England	Environmental toxins
Claire Bell <a href="mailto:claire.bell@environment-agency.gov.uk">claire.bell@environment-agency.gov.uk</a>	Environmental Protection Agency	England	Drinking water
Nick Cartwright <a href="mailto:nick.cartwright@environment-agency.gov.uk">nick.cartwright@environment-agency.gov.uk</a>	Environmental Protection Agency	England	WFD
Ann-Karin Thorén <a href="mailto:ann-karin.thoren@havochvatten.se">ann-karin.thoren@havochvatten.se</a>	Swedish Agency for Marine and Water Management	Sweden	WFD, Drinking water
Carina Carlsson-Ross <a href="mailto:Carina.Carlsson-Ross@jordbruksverket.se">Carina.Carlsson-Ross@jordbruksverket.se</a>	Swedish Board of Agriculture	Sweden	SUD
Mikaela Gönczi <a href="mailto:Mikaela.Gonczi@slu.se">Mikaela.Gonczi@slu.se</a>	Swedish University of Agricultural Sciences	Sweden	Pesticides





**Picture 1.** Project meeting 2 in London 2017-09-08. The meeting was arranged at the Environmental Protection Agency. At the back from left; Jon Gulson, Claire Bell (host of the meeting), Darrel Crothers, Christophe Bervoets, Dennis Kalf (attending by video). In the front; Carina Carlsson-Ross, Emer Cooney, Ann-Karin Thorén.



## 2. Results

Within the project we have had two meetings, one in Gothenburg April 14 and one in London September 8. Between the meetings we collected information on measures in a matrix.

### 2.1 The first meeting

At the first meeting Emer Cooney, Christophe Bervoets, Carina Carlsson-Ross and Mikaela Gönczi attended at the Swedish Agency for Marine and Water Management in Gothenburg. Jon Gulson, Claire Bell and Dennis Kalf attended by video link.

We started the meeting by presentations of each participant and the organisations that we represented. The presentations are available at the IMPEL web platform:

<https://impeleu.basecamphq.com/projects/13258941-reduce-pesticides-in-water-redupiwa/log>

For those interested in the presentations and who not have access to the IMPEL web platform, please contact one of the participants, see the participants listed previously in this report.

Each presentation included the interest of the participant and suggested issues for further comparison. Here below are summaries of the respective interests and suggestions.

---

#### **Interests/suggestions from the Netherlands**

To learn from other member states, about other innovative measures to reduce pesticide emissions to water, that we in the Netherlands have not implemented.

To show and help out other member states with the measures we have/are implementing in the Netherlands.

---

#### **Interests/suggestions from Belgium - Flandern**

- What happens with the remnants of pesticides in used receptacles? How is this organised in other countries?
- What happens with the remnants of pesticides in used refillable tanks that will be cleaned at the establishment? How is this organised in other countries?
- What about pesticides that are forbidden in one country but not in another and when they are imported?



---

### **Interests/suggestions from Ireland**

What is the role of the water companies in dealing with pesticides in drinking water in your country?

---

### **Interests/suggestions from England**

2 main areas of work:

Towards compliance with European and national EQS (WFD)

Towards compliance of WFD Article 7, i.e. meeting Drinking Water Directive standard(s) and avoiding need for additional treatment

---

### **Interests/suggestions from Sweden (Swedish Agency for Marine and Water Management)**

#### **Compare elements, e g**

- Methods for monitoring efficiency in measures aiming at SUP and WFD objectives - indicators used, sources of information, design of monitoring programs
- Policy instruments used to regulate usage

#### **Compare process, e g**

- Map and describe the implementation cycle from identification of pressure for pesticides to execution and financing of measures including methods, tools and legislation.
  - Describe legislation, policy instruments and the responsibilities shared by authorities and pesticide users. Bring attention to good examples and significant gaps
- 

### **Interests/suggestions from Sweden (Swedish Board of Agriculture)**

Indicators for monitoring and evaluation of the National Action plans for Sustainable Use of pesticides



## 2.2 The second meeting

The second meeting was held at the office of the Environmental Protection Agency in London. In London Emer Cooney, Christophe Bervoets, Carina Carlsson-Ross, Ann-Karin Thorén, Jon Gulson, Nick Cartwright, Darrell Crothers and Claire Bell was present and Dennis Kalf attended by video link.

We discussed the results in the matrix, reflecting briefly over similarities and differences.

Emer Cooney had before the meeting raised some questions regarding the organisation of the drinking water protection. The questions are found as a work sheet in the matrix.

Claire Bell held a presentation of the organisation of the drinking water supply and drinking water protection in England.

We also discussed activities for 2017 and a draft of the Terms of Reference to be sent to the General Assembly.

## 2.3 The Matrix for comparing measures and instruments

The draft matrix was constructed by Dennis Kalf after the first meeting. It was then interacted between the project participants, new columns were added and information was filled in.

In Annex 1 you will find some examples from the content in the matrix. Since it contains several work sheets and many rows in each work sheet it is inconvenient to present it completely here in this report.

The complete matrix can be found at the IMPEL web platform:

<https://impeleu.basecampHQ.com/projects/13258941-reduce-pesticides-in-water-redupiwa/files>

For those interested in the matrix and who not have access to the IMPEL web platform, please contact one of the participants, see the participants listed previously in this report.

## 2.4 Summary of comparison; similarities and differences

### 2.4.1 Similarities

All countries have adopted the Action plans according to SUD. Web addresses to the Action Plans are available in Appendix 1.

All countries have developed indicators in order to assess the progress of the measures in the Action plan, however variously. It could be an area for further in depth comparison for future work within this project.

Participating countries had similar implementation of regulations on pesticide usage, e.g. all professional users should have a certificate of competence.



### 2.4.2 Differences

All countries do have regulation aiming at keeping buffer zones avoiding the use of pesticides along rivers, watercourses, lakes and near drinking water wells. However, the extent of these buffer zones differs with the Netherlands having 0,5 – 1,5 m<sup>1</sup> compared with Belgium, Flandern that have 2-30 m depending on plant protection product and aquatic organisms.

There are differences in the implementation of measures and instruments in safe guard zones implementing drinking water protection according to article 7 WFD.

In England measures applied in safe guard zones are voluntary; in Sweden they are obligatory, however not covering all protected areas for drinking water supply.

---

<sup>1</sup> Measures reducing wind drift: The relatively small buffer zones are only possible using a minimum of 75% mitigation measures. In many cases the label of pesticides asks more than 75% (90-95%) when applying these small buffer zones.



### 3. Conclusions

It has been nice and valuable to meet the project participants and exchange knowledge and experiences. The idea of the project was to, within a limited scope, compare the implementation in general and the pesticide regulation specifically. We initially anticipated the scope of comparing measures for reducing pesticide residues in water as quite limited. However it turned out to be obvious that we participants had different background, interests and work tasks. Consequences of that were

- surprisingly many and various aspects of the problem of reducing pesticides in water
- broadened view of measures, instruments and how to organise the work
- time was needed to discuss in order to understand various aspects and interests

We had just started when it was time to wrap up the project.

Fields of further in depth comparison might be

- efficient indicators for comparing implementing SUD ( e.g statistics of pesticide usage, monitoring in waters)
- role and responsibility; who is in charge of taking measures in catchments protecting drinking water quality?

The present project leader is now leaving for other work tasks and at the date of this writing, it is not clear who will be the project leader for 2017.

### 4. Recommendations

If possible; narrow the scope of comparison in order to get deeper. Or alternatively, extend the project time to several years.

Acknowledge the time it takes to:

- get to know each other
- understand the role and responsibilities of each participant
- understand the role and responsibilities of respective organisation the participant represents
- find good and efficient ways of communication



# Annexes

---

[ANNEX 1 Matrix, examples](#)

[ANNEX 2 Links to more information](#)

## REDUCE PESTICIDES IN WATER

Legal obligation						
Policy agreement/voluntarily						
Legal obligation and voluntary						
Directive 128/2009/EC article	Measures Netherlands	Measures Scotland	Measures Sweden	Measures Ireland	Measures England	Measures Belgium
4	<b>National action plan</b>					
	<a href="https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_netherlands_en.pdf">https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_netherlands_en.pdf</a>	<a href="https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_uk_en.pdf">https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_uk_en.pdf</a>	<a href="https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_sweden_en.pdf">https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_sweden_en.pdf</a>	<a href="https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_ireland_en.pdf">https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_ireland_en.pdf</a>	<a href="https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_uk_en.pdf">https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_uk_en.pdf</a>	<a href="https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_belgium_en.pdf">https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_sup_nap_belgium_en.pdf</a>
5	<b>Training</b>					
	Obligation to have a certificate of competence for professional users for buying, distributing or storing pesticides (since 1966). Certificate valid for 5 years and the certificate system managed by <a href="http://www.erkenningen.nl">www.erkenningen.nl</a> )	There has been a requirement for professional pesticide users to have a certificate of competence for many years (at least 30). There was an exemption for those born before 31/12/1969 known as Grandfathers rights which allowed them to use professional products under certain conditions without a certificate. However since November 2015 everyone who uses a	Obligation to have a certificate of competence to be able to use pesticides for professional use. In order to buy or distribute it is necessary to have someone at the premises with a valid certificate of competence. Certificate is valid for 5 years and can be renewed after training of competence.	Professional user to hold certificate and comply by 26/11/2015. Distributor to hold certificate and comply by 26/11/2013. Advisor to hold certificate and comply by 26/11/2013.	Similar to Scotland. The "Grandfathers rights" exemption has now gone, such that all users have required certification since November 2015. Training courses for users is delivered in accordance with a syllabus developed by City and Guilds. Training and certification for distributors and advisors is provided through private sector organisations and delivered in	A license is obligated for persons who: <ul style="list-style-type: none"> <li>• purchase and store pesticides for professional use or adjuvants or use pesticides in the course of their professional activities;</li> <li>• provide information on plant protection products or adjuvants;</li> <li>• distribute or sell pesticides or adjuvants.</li> </ul> A plant license is only granted to individuals. There are 5 types of licences depending on the person's degree: NP: Distribution and





		<p>professional product must have a certificate of competence and grandfather rights no longer exist. Training courses for users is delivered in accordance with a syllabus developed by City and Guilds. Training and certification for distributors and advisors is provided through private sector organisations and delivered in accordance with a syllabus developed by BASIS.</p>			<p>accordance with a syllabus developed by BASIS. NR</p>	<p>information on pesticides for non-professional use  P1: Assistant professional use  P2: Professional use  P3: Distribution and information on pesticides for professional use  PS: Specific professional use  A license P3 allows to perform the tasks of an licensed NP, P1 and P2. Each licensee must attend a number of training activities during the period of validity of his license. These training activities are under the jurisdiction of the provinces.  This obligation aims to increase knowledge about crop protection and to inform the holders on improved and / or new practices.  Lectures, field visits, seminars, demonstration projects, ... are included</p>
--	--	---	--	--	--	--



**Legal obligation**  
**Policy agreement/voluntarily**  
**Legal obligation and voluntary**

## Reducing Pesticides in Water

128/2009/EC article		Measures Netherlands	Measures Scotland	Measures Sweden	Measures Ireland	Measures England	Measures Belgium
<b>11</b>	<b>Specific measures protection aquatic environment and drinking water</b>						
	1	Crop free zones (0,5-1,50 meter) depending on the type of crop. 0,5m extensive sprayed crops, >0,5m intensive sprayed crops.	The regulatory pesticide risk assessment which all pesticide products must go through to be able to be used in the UK considers the risks posed to water and identifies mitigation measures.	When spraying outside it is obligatory to keep a 2m distance to open ditches, drainage inlets, and storm water discharges, 6 m to lakes and water courses, and 12 m to wells used for drinking water	Buffer zones around points. Restricted and as defined.	As for Scotland. Buffer strips also required under Cross Compliance rules	If high concentrations of product are detected in the surface water, the government has to impose restrictive measures. In the worst case a product can even be banned. So for the users of pesticides it is important to use the pesticides in a responsible way.
	2	Water used to clean spraying equipment may be discharged onto non-cultivated land, but not to surface water or the municipal sewers. The results of research into organic purification of waste water are promising and will be implemented in	The Water Environment (Controlled Activities) (Scotland) Regulations 2011 contain a number of rules in relation to the use of pesticides - see page 18 & 19 of below document: <a href="http://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf">http://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf</a>	When mixing, filling or cleaning the equipment on the outside, it is forbidden to do so on roads, on gravel areas or very permeable areas, or on hard surfaces where it is not possible to collect the pesticide.		Catchment sensitive farming programme investigates impacts of agricultural practices, success of measures and encourages good practice. <a href="https://www.gov.uk/guidance/catchment-sensitive-farming-reduce-agricultural-water-pollution">https://www.gov.uk/guidance/catchment-sensitive-farming-reduce-agricultural-water-pollution</a> . It also links to grants for measures such as biobeds/biofilters.	All professional users are obliged to respect the doses and buffer zones indicated on the label of crop protection products. The buffer zones are set at 2 to 30 meters according to the risk of each plant protection product to the aquatic organisms. For the products that are most harmful to aquatic organisms additional precautions are required. The Regions may, as a result of the European Water Framework Directive (2000/60 / EU)



	the law.				<p>and the Directive on Sustainable Use of Pesticides (2009/128 / EU), yet impose additional measures for the protection of surface water.</p> <p>In the Flemish part of Belgium:</p> <p>Along surface water:</p> <ul style="list-style-type: none"><li>• agricultural and horticultural areas: 1m or 3m</li><li>• commercial activities outside agriculture: 6m</li><li>• individuals: 1m</li></ul> <p>On hardened areas such as gravel, dolomite, tiles, patio, concrete ...</p> <ul style="list-style-type: none"><li>• public services: prohibited</li><li>• for commercial activities: minimum usage</li></ul> <p>Next to hardened areas such as gravel, dolomite, tiles, patio, concrete ...</p> <ul style="list-style-type: none"><li>• the verge: prohibited</li></ul>
--	----------	--	--	--	--



## Annex II. Links to more information

### Monitoring

Dutch system that opens monitoring data for pesticides

<http://www.bestrijdingsmiddelenatlas.nl/>

### Risk assessment

Swedish tool for risk assessment of pesticides in ground- and surface water

<http://www.slu.se/centrumbildningar-och-projekt/kompetenscentrum-for-kemiska-bekampningsmedel/modeller/macro-se/>

Safe Guard Zone Pressure Maps, England

<https://ea.sharefile.com/share?#/view/sa2bd6de96b8412fb>

### Measures in agriculture

<https://www.gov.uk/guidance/catchment-sensitive-farming-reduce-agricultural-water-pollution>

### Drinking water protection

Surface Water Safeguard Zone Action Plans, England

<https://ea.sharefile.com/share?#/view/scac3ff7da4a424eb>

Ground Water Safeguard Zone Action Plans, England

<https://ea.sharefile.com/d-sa22fd79de304532a>

### River Basin Management Plans

<https://www.gov.uk/government/publications/river-basin-management-plans-accessing-data-and-information-guide>

