

10. SIRIS

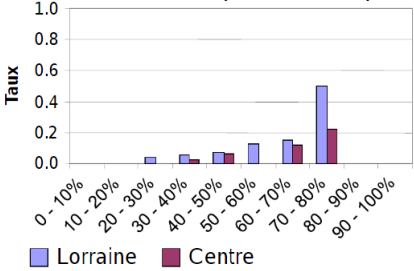


FAIRWAY partner: Nicolas Surdyk (BRGM, FR)

Brief description

SIRIS-Pesticides is a decision support tool that allows classifying pesticides according to their potential to reach surface water and groundwater. SIRIS-Pesticides help to organize the monitoring of pesticides in waters at the regional or local scale. It is a software tool developed around a simple interface.

Contaminants covered (e.g. nitrate, pesticides etc.)	Pesticides
Intended end users (e.g. farmer, water quality manager, policy maker)	Farmers and advisors; catchment managers
Level of expertise and/or training required	Knowledge of pesticides transfer is required.
Geographical resolution (e.g. field, catchment, national)	Catchment scale, Waterbody
Temporal resolution (e.g. daily, annual, long-term).	Annual
Real-time component (e.g. live weather data, soil moisture data feeds etc.)	None
Number and type of mitigation measures included	None
Platform (e.g. paper-based tool, phone app, bespoke software).	Online application In French
Frequency of updates	
Cost/availability	Free (after registration)
Number of users or number of copies distributed/downloaded/purchased	Online application (approx. 100)
Links to demo material and other relevant information (e.g. user guides).	Manual (online) in French : https://siris-pesticides.ineris.fr/guide_utilisation Other information in French at https://siris-pesticides.ineris.fr/
Additional comments	

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Input data required to run the DST	A database with the main properties of the pesticides is provided Doses uses on the catchment have to be provided																																	
Outputs (including links to water quality and economic or financial aspects)	Classification of phytosanitary substances to be monitored in surface water and groundwater according to a harmonized method No direct links to water quality (only leaching potential) No link economic or financial aspects																																	
Age/provenance of supporting data used to develop the DST	Last update in 2012, database is updated continuously The data come from French data bases or specific reports from INERIS (see https://siris-pesticides.ineris.fr/bibliographie)																																	
Country-specific calibration or data requirements (including restrictions on use)	The properties of pesticides are theoretically the same in Europe. For these parameters, no calibration is necessary. The users provide the data that are catchment/country specific (doses).																																	
Details of validation and testing	<p>Some comparisons on rate of substance measured in the water (detected or above 0,1 µg) versus the substances classified by SIRIS are available (see an example below for two French regions)</p>  <table border="1"> <caption>Data from the bar chart: Rate of substance measured in water vs. SIRIS classification for Lorraine and Centre</caption> <thead> <tr> <th>Classification Range (%)</th> <th>Lorraine (Taux)</th> <th>Centre (Taux)</th> </tr> </thead> <tbody> <tr><td>0 - 10%</td><td>0.00</td><td>0.00</td></tr> <tr><td>10 - 20%</td><td>0.00</td><td>0.00</td></tr> <tr><td>20 - 30%</td><td>0.00</td><td>0.00</td></tr> <tr><td>30 - 40%</td><td>0.05</td><td>0.05</td></tr> <tr><td>40 - 50%</td><td>0.05</td><td>0.05</td></tr> <tr><td>50 - 60%</td><td>0.10</td><td>0.10</td></tr> <tr><td>60 - 70%</td><td>0.15</td><td>0.15</td></tr> <tr><td>70 - 80%</td><td>0.20</td><td>0.20</td></tr> <tr><td>80 - 90%</td><td>0.50</td><td>0.25</td></tr> <tr><td>90 - 100%</td><td>0.00</td><td>0.00</td></tr> </tbody> </table> <p>A poster about the validation can be found here (in English): https://www.researchgate.net/publication/281626217_SIRIS-Pesticides_update_and_validation_of_a_decision_support_system_for_pesticides_monitoring_in_freshwater</p>	Classification Range (%)	Lorraine (Taux)	Centre (Taux)	0 - 10%	0.00	0.00	10 - 20%	0.00	0.00	20 - 30%	0.00	0.00	30 - 40%	0.05	0.05	40 - 50%	0.05	0.05	50 - 60%	0.10	0.10	60 - 70%	0.15	0.15	70 - 80%	0.20	0.20	80 - 90%	0.50	0.25	90 - 100%	0.00	0.00
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Date developed/released (or planned release date)	First developed in 2006																																	
Author/developer names and affiliations	Ineris																																	
Member state(s) where developed	FR																																	
Member State(s) where currently used	FR																																	
Key publication references (including url)	Le Gall, A-G, Jouglet, P., Morot, A., Guerbet, M., (2007) SIRIS-Pesticides: update and validation of a decision support system for pesticides monitoring in freshwater. Conference: 17. SETAC Europe Annual Meeting, At Porto, Portugal. https://www.researchgate.net/publication/281626217_SIRIS-Pesticides_update_and_validation_of_a_decision_support_system_for_pesticides_monitoring_in_freshwater																																	





Any other useful information (e.g. screenshots of DST input/outputs)

The tool is based on the analysis of five criteria: 1 quantity of use criterion, represented either by the quantities of active substances used in a given territory, or by a combination of the doses of active substances applied on this territory and the developed surfaces treated; 4 criteria relating to the behavior of active substances in the environment: their affinity for the soil (represented by the organic carbon-water partition coefficient, Koc), their solubility in water, their degradability

INERIS		FICHIER DES EAUX SOUTERRAINES									
maîtriser le risque pour un développement durable											
		Nom utilisateur :		Fairway							
		Territoire considéré :		Case Study							
		Surface de ce territoire (ha) :		2							
		Période :		1998							
Substance	CAS	Famille chimique	Activité biologique	Koc (mL.g-1)	Solubilité (mg.L-1)	DT50 champ (j)	Hydrolyse à pH7	Dose	Surface normalisée	Rang	
tebuthiuron	34014-18-1	Urée	Herbicide	80	2500	400	TS	2	0.5	100.00%	
mesosulfuron-methyl	208465-21-8	Sulfonyleurée	Herbicide	92	483	77.3	TS	2	0.5	87.33%	
aldicarbe	116-06-3	Carbamate	Insecticide ; Nematicide	30	4930	46.75	TS	2	0.5	87.33%	
thiamethoxam	153719-23-4	Néonicotinoïde	Insecticide	56.2	4100	52	TS	2	0.5	87.33%	
piclorame	1918-02-1	Acide picolinique	Herbicide	87	560	180	stable	2	0.5	87.33%	
terbacile	5902-51-2	Uracile	Herbicide	72	710	228	stable	2	0.5	87.33%	
imazamethabenz-methyl	81405-85-8	Imidazolinone	Herbicide	66	1370	47	TS	2	0.5	87.33%	
monocrotophos	6923-22-4	Organophosphoré	Insecticide ; Acaricide	18.9	818000	30	TS	2	0.5	87.33%	
chlorate de sodium	7775-09-9	Minéral	Herbicide	10	790000	200	stable	2	0.5	87.33%	
diméthipin	55290-64-7	Dithiine	Régulateur de croissance	9	3000	126.5	stable	2	0.5	87.33%	
fluroxypyr	69377-81-7	Acide picolinique	Herbicide	66	6500	51	TS	2	0.5	87.33%	
imidaclopride	138261-41-3	Néonicotinoïde	Insecticide	225	610	174	TS	2	0.5	84.00%	
nuarimol	63284-71-9	Pyrimidine	Fongicide	241	26	150	TS	2	0.5	77.33%	
fosthiazate	98886-44-3	Organophosphoré	Nematicide	59	9000	13	TS	2	0.5	74.67%	
metasulfuron-methyl	74223-64-6	Sulfonyleurée	Herbicide	39.5	2790	31.97	stable	2	0.5	74.67%	
fosetyl-aluminium	39148-24-8	Organophosphoré	Fongicide	0.1	110000	0.04	TS	2	0.5	74.67%	
foramsulfuron	173159-57-4	Sulfonyleurée	Herbicide	78.4	3293	5.5	TS	2	0.5	74.67%	
sethoxydime	74051-80-2	Cyclohexanedione	Herbicide	100	4700	5	TS	2	0.5	74.67%	
prosulfuron	94125-34-5	Sulfonyleurée	Herbicide	16.67	4000	16.4375	TS	2	0.5	74.67%	
metribuzine	21087-64-9	Triazinone	Herbicide	37.9	1050	12	TS	2	0.5	74.67%	
prophame	122-42-9	Carbamate	Herbicide ; Régulateur de crois	98	250	11	TS	2	0.5	74.67%	