LIFE / FIT FOR REACH

Seminar on indicators to measure improvement in chemicals management

Background paper

by Antonia Reihlen, consultant, Oekopol LtD, Germany

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1 Introduction

1.1 Goals of the Seminar

The overarching goal of the "Seminar on Indicators to Measure Improvement in Chemicals Risk Management" is to contribute to discussions and guidance on indicators to measure project progress and success under the EU LIFE Programme.

Discussions at the workshop will aim to identify suitable indicators to measure the success of chemicals risk management activities. In doing so, questions of data availability for indicators, the timing of success measurements as well as at what particular step in a risk management chain a measurement is meaningful will be discussed. Furthermore, the areas covered by indicators, such as environmental risk, socio-economic effects or awareness and behaviour will be discussed in detail.

To inspire discussions on chemicals risks management in different contexts, including at company, national or at EU policy level, the seminar does not limit itself to the LIFE programme and projects but aims to also generalise findings to other chemicals risk management situations. Nevertheless, LIFE projects and their indicators will be the starting point of the seminar and the findings and conclusions will be pinpointed to serve the LIFE programme.

1.2 Seminar Setting

The seminar will start with a number of presentations from different perspectives sharing approaches and methodologies, experiences and learnings from monitoring or measuring progress in chemicals risk management.

The presentation will inform two working group sessions with the latter session building up on the results of the first workshop day. During the first working group session, the impacts of different risk management measures will be described and potential indicators to measure these will be identified and discussed based on examples from ongoing LIFE projects.

The working groups of the second day will build up on the outcome of the first day and will be organised according to different areas in which indicators could be applied to measure success. Here, discussions will further explore the suitability of indicators and propose, if possible, approaches to indicators in LIFE projects, including possible data collection methodologies or limitations to measuring change.

It is intended to use the workshop conclusions to draft recommendations and draft guidance to the LIFE programme on the use of indicators to measure project impacts in the field of chemicals risk management.

2 Understanding of Terms

A few terms that we expect to be used during the workshop are explained in the following to avoid misunderstandings.

2.1 Chemicals risk management (CRM)

The term "chemicals risk management" covers all activities that contribute to:

- **Identifying and characterising risks** to human health or the environment including (developing methods and tools for) assessing of and data generation on
  - (substance) hazards,
  - Uses,
  - emissions and
  - exposures to chemicals
- **Priority setting** on risk management;
- **Planning and implementing measures** to reduce the use or emissions/ exposures to chemicals (e.g. substitution, process design, wastewater treatment, personal protective equipment etc.);
- Making available **knowledge, methods, tools and resources** to implement risk reduction measures;
- **Raising awareness** and incentivising behaviour changes.

The implementation of risk management measures has a direct effect on the level of risk.

All other activities, like the risk identification and characterisation, priority setting, or knowledge generation are pre-conditions for actual risk reducing measures and hence only have an indirect but frequently very important effect on the (later affected) level or risk.

Risks may be managed by economic actors and authorities. The actors would use different instruments and knowledge bases to plan and implement risk management measures and the types and extents of consequences of their actions largely differ.

2.2 CRM effects

CRM have a direct effect on e.g. the composition of a product, the design of a process, the awareness level of people or the knowledge base of the authorities. These direct effects may cause further effects along the lifecycle of a product and/or in a society and/or may be a trigger or information basis for specific risk management actions.

We use the term effect for any change from a risk management activity, which is directly linked to it and not (yet) an improvement in environmental or human health (impacts, cf. below).

2.3 CRM Impacts

We use the term "impact", when referring to changes in environmental or consumer health. This includes as primary and chemicals specific type of impact any change in the chemical quality of the environment and the intactness of ecosystems as well as a reduction in chemicals – related diseases or health impairments. Reduced exposure levels, such as indicated by biomonitoring data, would be an effect rather than an impact.

2.4 Cause effect chain of chemical risk management

The sequence of actions or effects triggered by a chemicals risk management measure and eventually ending in the intended (positive) impact can be considered a cause-effect chain. This is illustrated in the following Figure.

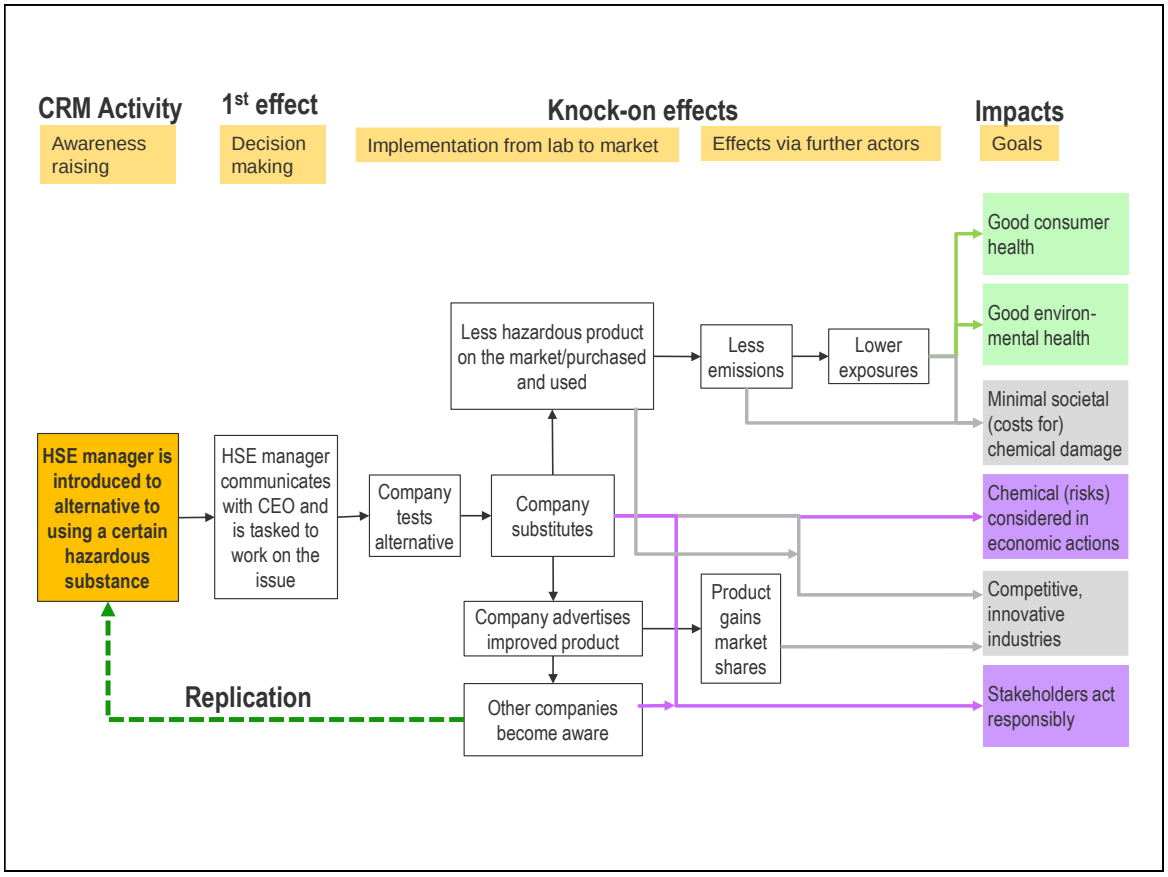

Figure 1: Illustration of a chemicals risk management cause – effect chain

2.5 More important terms

The following terms are briefly defined, as they may be frequently used in the discussions at the workshop.

- Substance hazard = properties of substances that may damage human health or the environment if exposure occurs (to a sufficient extent)
- Exposure = contact between a substance and humans via skin, inhalation or ingestion or presence of a substance in the environment (water, air, soil, sediment or biota)
- Risk = relation between hazardousness of a chemical and exposure level, which expresses the likelihood that a chemical causes damage to human health or the environment
- Substances of very high concern (SVHC) = substance on the candidate list of REACH that have very hazardous properties, i.e. carcinogenic, mutagenic or reprotoxic substances (CMRs), very persistent, very bioaccumulative substances and persistent, bioaccumulative and toxic substances (PBT/vPvB), as well as endocrine disrupters or respiratory sensitizers
- Chemicals = substances and/or mixtures
- Articles = objects, for which the shape, structure and design is more important to achieve their intended function than the chemical composition
- Regulatory risk management = activities of national or EU authorities involving the development and adoption of legislation aimed to identify and/or reduce chemical risks

- Risk management along the supply chain = measures implemented by the economic actors, i.e. substance manufacturers, producers of mixtures, materials and articles as well as retailers, to provide information on and guidance for the safe use of substances as such, in mixtures or in articles. This includes, among others, chemical safety assessments, communication conditions of safety use via safety data sheets and including advising against uses as well as recommending risk management measures to the customers.

3 Background on indicators

Indicators are quantified values describing a particular situation or state. Measuring and comparing the same indicator over time allows assessing the types and extent of changes resulting from the particular activities. Hence, indicators quantify progress and may either compare a state to the initial situation (distance to baseline) or in terms of how much progress is still needed (distance to target).

3.1 Types of chemicals risk management indicators

In the context of chemicals risk management, indicators would be used to measure and indicate, if risk management activities are successful. Three types of indicators could be identified:

- **Activity** indicators: describe the number and intensity of risk management activities implemented, e.g. number of exposure measurements, litres of treated waste water, number of substances substituted. In LIFE projects, these frequently correspond to the deliverables of a project.
- **Effect** indicators: describe to what extent a risk management activities changes the levels of emissions, exposures and risks, the behaviours of different actors, the awareness level on risks or the availability of information of a risk management measure. They express progress of the various intermediate steps to reaching a goal.
- **Impact** indicators: show in how far the effects of an activity actually have an impact on human health and/or the intactness of the environment. If societal values are also of relevance and/or economic impacts should be measured, further impact areas may be defined (e.g. human rights or competitiveness of companies).

The following figure illustrates the types of indicators.

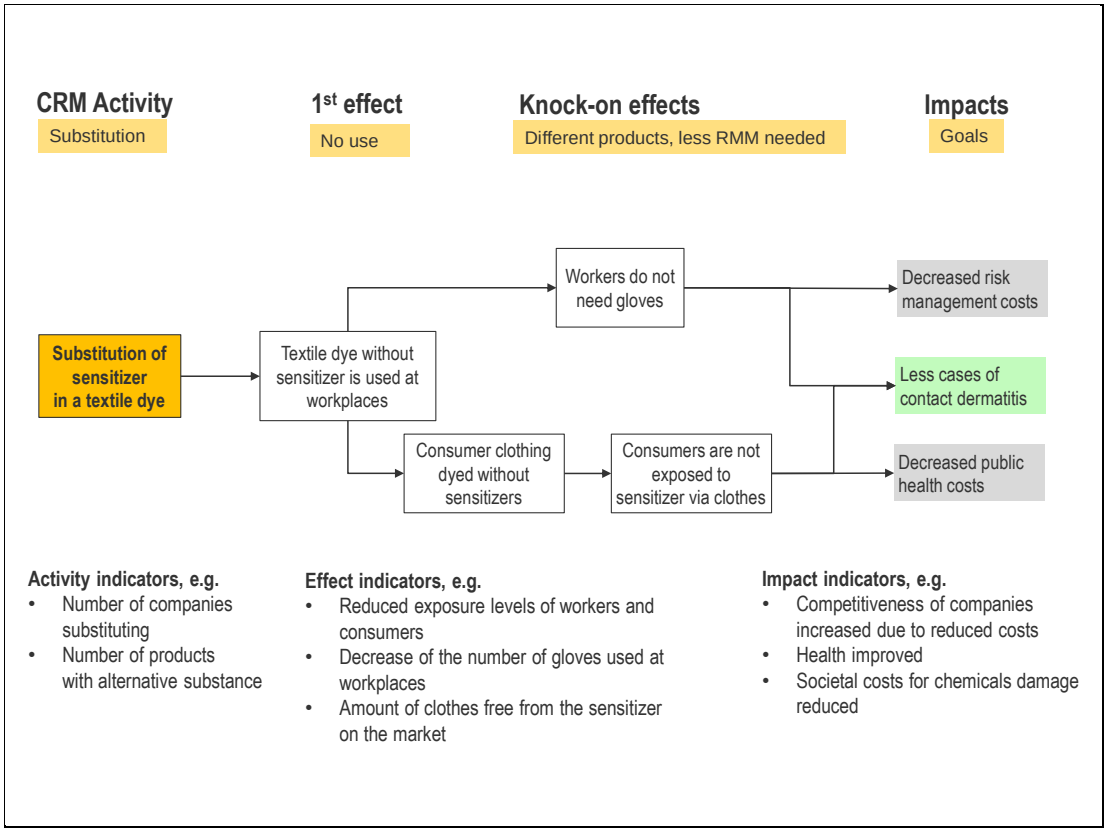

Figure 2: Illustration of indicators measuring activity, effect or impact

Another option to systematise indicators relates to the effects or ultimate impacts, a risk management measure could have on the various actors, products and processes or the overall societal and economic context:

Indicators on **the state of human and environmental health** (green box in Figure 2) measure the types and extent of related changes amounts due to, among others, changes in emission and exposure level but also due to e.g. effects on environmental impact categories as defined for LCAs (i.e. biodiversity, greenhouse gas emissions etc.).

Indicators on **awareness and behaviour** measure if, how and to what extent the different actors change their perception and interpretation of product and process safety and/or whether or not, how and to which extent they change their actual behaviour (which would eventually affect the risk level from chemicals).

Indicators on **governance and policy making** measure, for example the types and number of tools developed to support chemicals risk management, the uptake of methods or findings in policy making, the increase in knowledge and information on chemical risks.

Socio-economic indicators (grey boxes in Figure 2) measure changes e.g. to the market share of a particular product, the competitiveness of companies, the number of employees in certain sectors, but also the number of work days lost to workers illness or societal costs to cure chemicals – related diseases.

3.2 Hierarchy of indicators

Chemicals risk management primarily aims at reducing the (eco)toxic risks posed by chemicals to human health and the environment. Consequently, indicators measuring the extent to which this aim is achieved are the most relevant.

The other indicator areas introduced above also consider the ideas behind the UN sustainable development goals by integrating the further dimensions of sustainability. Sustainability is a relative measure (i.e. something cannot be sustainable as such but only more sustainable than something else) of the environmental, social and economic performance of a product, process, activity etc. For each of these three dimensions different impact types can be defined.

- For the environment, the most accepted are the impact categories defined for standardised life cycle assessments, such as greenhouse gas potential, acidification, land use or eutrophication.
- For the social dimensions, frequently used impact categories are for example the availability of a healthy environment to future generations, fair working conditions, access to healthy food and clean water
- For the economic dimension frequently used impact categories are for example the innovation capacity and competitiveness of an economy, the ability of economic actors to maintain or increase their productivity etc.

Many of the above impact categories also appear in socio economic analyses, social assessments, cost benefit assessments or impact assessments of policy measures etc.

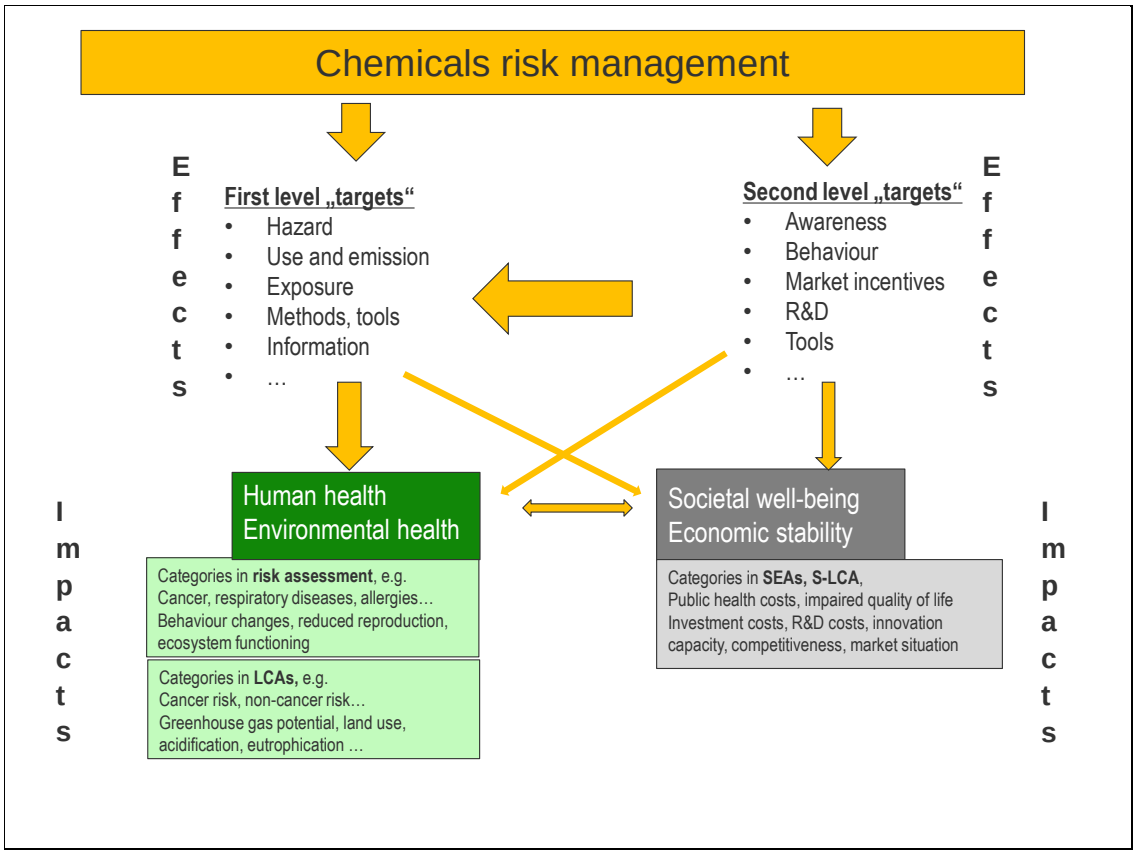

Figure 3: Hierarchy of chemicals risk management indicators and their interlinks

While these areas are important to judge on the overall sustainability of a measure, they would, according to our understanding, not overrule the impacts on (eco-)toxicity if measures are to be evaluated from a chemicals risk management perspective.