



EUROPEAN
COMMISSION

Community Research



Publishable summary – RISKCYCLE 1st period (#226552)

1. Publishable summary

Introduction

With regard to life cycle thinking it is important that products undergo a recycling step after their use phase. Unpredictable and not foreseen health and safety problems may result if the composition and the behaviour of components and additives in recovered materials are unknown. In spite of some common efforts to harmonize the safety assessment of chemicals and products a new problem with recovered material additionally appeared by the material flow in a circular economy at global scale with its risks for health and the environment in consequence of the worldwide trade of chemicals and products. Circular Economy is a concept that is transforming traditional patterns of economic growth and production. The conventional perception of economic systems is that they are linear. The linear system is converted to a circular system when the relationship between resource use and waste residuals is taken into consideration. Figure 1 illustrates the simplified material flow of a circular economy in a global scale with health and environmental risks.

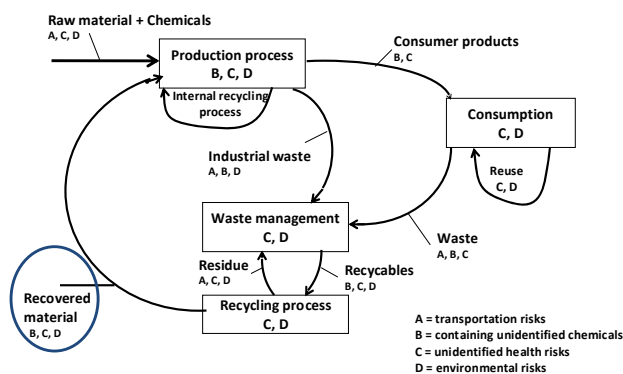


Fig. 1 Simplified material flow of a circular economy with health and environmental risks

In 1996 the German parliament passed worldwide first the law on “Kreislaufwirtschaft” (Circular Economy) and since then a number of comments demand a revision of the law. The law on Circular Economy should be changed to a law on “Material Flow”. But so far this approach seemed to be too complex to follow and describe every substance and material and their flow through the economy and the consuming society.

The following points should be considered on the way to a law on “Material flow”: Waste and pollution prevention are the foremost aim of the development of a circular economy. The prevention could be reached by a change of technology of production to cleaner production. A better reuse and recycling of waste, by using a better and more recycling friendly construction of goods, should be demanded to fulfil higher recycling rates. Step by step new economic patterns of production, reuse and recycling have to be established. Economic tools like producer responsibility, tax and fee policies, tax deduction etc. are also necessary. Furthermore efforts should be extended to mobilise the whole society to establish a new pattern of consumption, reuse, recycling and avoidance of waste.

A new threat is coming from closing the loop in a global scale with products of unknown specification. Unsafe consumer and industrial products get onto the global market. One compound with estrogenic activity that has been studied extensively as an intermediate in the production of polycarbonate and epoxy resin is Bisphenol A (BPA). A deeper analysis of the

successful recycling of paper and cardboard show, as it is done in Europe, especially graphical paper undergo a recycling process and make their ways into recovered material with unpredictable and not foreseen health and safety problems. BPA is introduced into the paper cycle through the recovery of used thermal paper. BPA is found in the wastewater and detected in the next paper product. Toilet paper has a high concentration of BPA, which can be found in the wastewater after use. Printing ink used in newspaper is contaminating the cardboard for packaging and entering the packed food exceeding the threshold values for Polycyclic Aromatics in the food by up to more than 10 times. As toxic substances present in e-waste we can list heavy metals like lead, mercury and cadmium and persistent organ halogen compounds like polychlorinated biphenyl's (PCBs) and brominated flame retardants (BFRs). It is estimated that up to 80% of e-waste from industrialized countries is exported to Asian and African developing countries for recycling and exploiting the inexpensive labour costs and weak enforcement of environmental laws.

All these examples show that in a circular economy the trade in a global dimension is not acceptable without a globally agreed risk assessment for existing and newly developed chemicals and products without using additional test animals.

Project objectives

Against this background, the overall objective of the introduced coordination action RISKCYCLE aims to establish and co-ordinate a global network of European and international experts and stakeholders from different programmes and countries of the EU, USA, Japan, China, India, Brazil, Vietnam etc. to explore the synergies of the research carried out within different programmes and countries, and to facilitate the communication with researchers, institutions and industries and make the information about the risks of hazardous chemicals and additives in products and the risk reduction measures for substances widely available.

As a result of this we have to define together future needs of R+D contributions for innovations in the field of risk-based management of chemicals and products of a circular economy in a global perspective making use of alternative strategies to animals test. In addressing how this objective will be achieved it is relevant to consider what information on present activities in this area are available and what is still unknown. The project is focussing on consequences due to the behaviour of chemicals and their release during recycling of the six fractions: paper, electronics, leather, lubricants, plastics, textiles.

The specific objectives of RISKCYCLE are to specify demands for tools for ecological design of consumer products, production, use and reuse of products and waste recycled to secondary material and products. Methods such as LCA, risk assessment and risk reduction strategies, environmental impact analysis, material flow analysis and economics related tools are considered to achieve socio-eco-efficient solutions.

The creation of a powerful platform will enable discussions among all stakeholders on usage, risks, chemical properties of consumer products, labelling and the fate of certain chemicals in products traded, used and recycled in a global scale, identify problems and solutions.

Moreover the RISKCYCLE consortium will start to conceptually develop a global strategy for a risk-based management of chemicals and additives in recycling and trade products and to identify alternative testing strategies and methods to avoid the enlargement and the outsource of animal tests to East and Southeast Asia.

In the end of the project research gaps for future research activities will be identify and the most effective way of ensuring continuing progress in this field will be identified, involving EU and other partners at global scale including also international organisations.

In conclusion, RISKCYCLE aims at taking into account the risk that chemicals and more precisely additives can pose in products that are sold in a circular economy at a global scale. The RISKCYCLE network closely collaborates with related projects, EU and international bodies and authorities to communicate and agree on standards and to avoid duplication and redundant work.

The RISKCYCLE project aims at influencing policy issues at a global scale, not only in developing countries but also in developed ones and will create awareness and enhance state of the art on risk-based management of chemicals and products among stakeholders.

How the RISKCYCLE consortium communicates to the public

RISKCYCLE web page

The projects web page was released after 4 months of the project at the beginning of January 2010 and can be found under the following URL: www.wadef.com

The web page also provides introductory information about the project in ten different languages, according to the origin and mother tongue of the participating partners. It is created to invite contacts with the interested parties in industry, academic institutions, regulators intergovernmental institutions, engineering companies and the public at a global scale. One of the most interesting and important parts of the web page is the presentation of the projects activities, which includes a Billboard of milestone activities and working arrangements. The timesheet gives the visitor information about past and future meetings and workshops. This part includes information about the project meetings and workshops, their approved agendas and minutes, the given presentations, executive summaries, proceedings and a lot of pictures, illustrating the work which has already been done within the project. As soon as the reports and deliverables of the project are approved, they will be published online on the web page.

Next to that the RISKCYCLE web page provides also links to web pages of the participating partners, Advisory Board members, other research projects and institutions, EC directorates, Upcoming research programmes, EU-Regional cooperation programmes and a list of Announcements of conferences connected to RISKCYCLE tasks.

RISKCYCLE disseminations

Disseminations related to the project RISKCYCLE are not only published via presentations within international workshops, but are also published in scientific journals or via the web page of the project.

Exemplary presentations about RISKCYCLE have been given for example during the 12th International Waste Management and Landfill Symposium in SARDINIA in October 2009, during the 3rd International Symposium on Energy from Biomass and Waste in Venice in November 2010 or during the 2nd International Conference on Environmental Management, Engineering, Planning and Economics in Mykonos in June 2009.

The first RISKCYCLE **Newsletter** was published in 2010 and it includes general information about the projects consortium members, the web page, the current progress and activities, and provides also detailed information about the workshops in 2010. The newsletter has been published online via the project web page, via e-mail and as hard copy during conferences.

RISKCYCLE workshops and meetings

The projects kick off meeting was held in October 2009 in Barcelona, Spain. It was organised by the coordinator of the project and hosted by partner CSIC. The aim was to align possible different interpretations of the projects tasks from all participating partners and Advisory Board.

During this meeting partners were called to exchange information about their institutions, field of work and culture. It also aimed at putting forward, discussing, determining and organising all future steps related to RISKCYCLE activities: data mining, meetings, web-page establishment, etc. Further discussion on the aims and objectives of the project set the basis for the work to be done and an effective collaboration.

The 1st RISKCYCLE workshop in May 2010 was held in Hanoi, Vietnam. Within the two days, 4th and 5th May 2010, 21 oral presentations were given and there were also 7 posters about research, connected to the topic of RISKCYCLE. At the end of the workshop a fieldtrip was organised for all participants and three recycling villages have been visited in Bac Ninh province, for example metal and paper recycling.

More than 100 participants, 30 from different countries over the world, 22 journalists of different domestic news papers took part at the workshop. Press releases, mentioning all activities of RISKCYCLE, the aim of this workshop and countries of participants were published by partner HUS. Two television channels (VTV1 and VTV2) broadcasted news about the workshop., including an interview of VTV2 with the coordinator of RISKCYCLE Project, Prof. Dr. Bernd Bilitewski and the main representative of partner HUS, Prof. Dr. Nguyen Thi Diem Trang, has made the workshop's event widely aware.



The projects 2nd workshop was held from 15 – 18 November 2010 in Shenyang, China. The host of the workshop was partner ICEEE, who had prepared an inventive programme. Due to the long-standing very good relationship between ICEEE and TUD, Shenyang University of Aeronautical Engineering was chosen to be the host of the second workshop. The workshop was attended by more than 70 participants. During the first day of the workshop the focus of the chosen presentations was to give local scientists and policy-makers the possibility to present especially local problems, related to the main tasks of RISKCYCLE.

The RISKCYCLE workshop was concluded every day with a final discussion led by the work package leaders and included further also poster presentations and a guided field tour to a facility for WEEE recycling and hazardous waste treatment.



Additional reports created by the consortium are the deliverables 4.1 (Report on alternative toxicity methods), 4.2 (List of databases and metadatabases with assessment), 5.1 (Definition of risk scenarios and historical analysis) and 6.1 (A report containing the state-of the art knowledge on LCA studies with relevance for additives). They are submitted and publicly available on our web page as soon as they are approved by the commission. Further on 9 oral and poster presentations during several international workshops and conferences, as well as 7 publications in national and international journals have been created by the project consortium.