TEXTE
102/2015

Feasibility Study „Supply chain communication on SVHC in Articles“

For our Environment

Umwelt Bundesamt

TEXTE 102/2015

Environmental Research of the
Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

Project No. (FKZ) 3711 65 409
Report No. (UBA-FB) 001922/E

Feasibility Study “Supply chain communication on SVHC in Articles”

by

Antonia Reihlen, Dirk Jepsen, Olaf Wirth
Ökopol GmbH, Hamburg, Germany

Dirk Bunke
Öko-Institut e.V., Freiburg, Germany

On behalf of the German Environment Agency

Imprint

Publisher:
Umweltbundesamt
Wörlitzer Platz 1
06844 Dessau-Roßlau
Tel: +49 340-2103-0
Fax: +49 340-2103-2285
info@umweltbundesamt.de
Internet: www.umweltbundesamt.de

/umweltbundesamt.de
/umweltbundesamt

Study performed by:
Ökopol GmbH
Nernstweg 32-34
22765 Hamburg, Germany

Study completed in:
May 2013

Edited by:
Section IV 1.1 International Chemicals Management
Dr. Christopher Blum

Publication as pdf:
http://www.umweltbundesamt.de/publikationen/feasibility-study-supply-chain-communication-on

ISSN 1862-4804

Dessau-Roßlau, November 2015

The Project underlying this report was supported with funding from the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear safety under project number FKZ 3711 65 409. The responsibility for the content of this publication lies with the author(s).

Table of Contents

List of Tables

Abbreviations

AC	Article Category
AP	Article Producer
AP-FA	Article Producer of Final Articles
AP-FTA	Article Producer of First-time articles
AP-IA	Article Producer of Interim Articles
Art.	Article
Class.	Classification
CMR	Carcinogenic Mutagenic and Reprotoxic Substance
CoU	Conditions of Use (Operational conditions and risk management measures)
CS	Candidate Substance (substance on the candidate list for authorisation under REACH)
CSA	Chemical Safety Assessment
CSR	Chemical Safety Report
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
DU	Downstream User
ECHA	European Chemicals Agency
Env.	Environment
EoL	End of Life
EPS	Expanded Poly Styrene
ERC	Environmental Release Category
ES	Exposure Scenario
EU	European Union
F	Formulator
FA	Final Article
FTA	First-time article
HBCDD	Hexabromocyclododecane
HELCOM	Helsinki Commission (marine convention for the Baltic Sea)
HH/hh	Human Health
HS	Hazardous Substance (substance which is classified as hazardous)
IA	Interim Article
IMDS	International Material safety Data System (of the automotive industry)
M/I	Manufacturer / Importer according to REACH
OC	Operational Conditions of use
OSPAR	Oslo Paris Commission (marine convention for the Atlantic Sea)
PBT	Persistent, Bioaccumulative and Toxic Substance
PNEC	Predicted No Effect Concentration
PROC	PROcessing Category
REACH	EU chemicals regulation on the Registration, Evaluation, Authorisation and Restriction of CHemicals
RMM	Risk Management Measure
RoHS	Restriction of Hazardous Substances (Directive)
SDS	Safety Data Sheet
SiA	Substances in Articles (ECHA guidance document)
STOT	Systemic target organ toxicity

SU	Sector of Use
SVHC	Substances of Very High Concern
TecI	Technical Information
UBA	UmweltBundesAmt
vPvB	Very Persistent and very Bioaccumulative Substance
w/w	weight / weight

1 Zusammenfassung

Insgesamt sind die Anforderungen für Chemikalien in Erzeugnissen in REACH kein ausreichender Schutz für Verbraucher und Umwelt vor Chemikalienrisiken und benachteiligen zusätzlich innereuropäische Hersteller. Es ist daher wichtig, die Schwachstellen dieser Anforderungen zu analysieren und Optimierungsmöglichkeiten bei der Weitergabe von (Anwender-) Informationen zu identifizieren.

Unter der neuen europäischen Chemikaliengesetzgebung REACH gelten für Erzeugnisse geringere Anforderungen als für Stoffe an sich oder für Stoffe in Zubereitungen. Die Registrierungsanforderungen beschränken sich im Wesentlichen auf die bestimmungsgemäße Freisetzung von Stoffen aus Erzeugnissen und den Gehalt an besonders Besorgnis erregenden Stoffe (SVHC). Artikel 7 der REACH VO bildet die Grundlage für die Pflichten der Industrie zu Chemikalien in Erzeugnissen. Darin werden die Hersteller und Lieferanten verpflichtet bei bestimmungsgemäßer Freisetzung eines Stoffes ein Registrierungsdossier einzureichen. Zusätzlich müssen Produzenten und Importeure mit Inkrafttreten der Notifikationsanforderungen des Artikel 7(2) im Juli 2011 die europäische Chemikalienagentur ECHA unterrichten, wenn in Ihrem Erzeugnis SVHC (> 1 t/a und > 0,1 Massenprozent) enthalten sind. Seit dem 28.10.2008 führt die ECHA hierfür eine Kandidatenliste der Stoffe (fort), die für eine Aufnahme in Anhang XIV in Frage kommen (Zulassungsverfahren).

Die Anwendung sicherer Chemikalien in der Wertschöpfungskette wird sich nur verbessern, wenn Stoffanwender die notwendigen Informationen erhalten. Ein Problembereich für Voll-zug, Produzenten und Importeure sind Importe von (Teil-) Erzeugnissen aus dem nicht-europäischen Ausland: Zu diesen liegen zum Einen i.d.R. nur wenig Daten zu Stoffen und Zubereitungen in Erzeugnissen vor, zum Anderen unterliegen außerhalb der EU gefertigte (Teil-) Erzeugnisse nicht der Zulassung. Vor diesem Hintergrund ist nicht sichergestellt, wie die benötigten Anforderungen an die Informationsgewinnung und -weitergabe durchgesetzt und für die Akteure (weiterverarbeitende Produzenten, Importeure, Vollzugsbehörden) verfügbar gemacht werden können. Dies gilt sowohl für innerhalb der EU hergestellte Erzeugnisse, als auch insbesondere für importierte (Teil-) Erzeugnisse aus dem nicht-europäischen Ausland.

Mit dem auszuschreibenden Projekt sollen die fachliche Begleitung und Optimierung des REACH-Prozesses sowie der Entwicklung von effektiven Instrumenten für die Ausgestaltung von REACH vorangetrieben werden. Speziell sollen Instrumente dazu erarbeitet werden, wie die Kommunikation und die Datenweitergabe in der Wertschöpfungskette besonders bei Importerzeugnissen verbessert werden kann. Daneben soll untersucht werden, ob und wie die – mit Hilfe des Projektes gestalteten Instrumente und Vorschläge – auch für europäische Produktregelungen effizient genutzt werden können.

Ziel des Projektes ist es, Szenarien zu entwickeln, die eine anforderungsgemäße, ausreichende Kommunikation der Daten zu Erzeugnissen in der Wertschöpfungskette ermöglichen. Die Möglichkeiten zur Datenbeschaffung und die Form der Weitergabe sollen an die spezifischen Anforderungen an Erzeugnisse, die nach Europa importiert werden, angepasst werden. Zudem sollen nach Möglichkeiten zur Verknüpfung und Umsetzung auf internationaler Ebene – wie dem emerging issue Chemicals in Products (CiP) unter SAICM – gesucht werden. Zusätzlich sollen auch die Anforderungen von europäischen Produktregelungen sowie die spezifischen Anforderungen von Endanbietern an das Produkt-Design an (Teil-) Erzeugnisse berücksichtigt werden.

Im ersten Teil des Projekts wurden existierende sowie in Entwicklung-befindliche Instrumente zur Datenweitergabe in Wertschöpfungsketten zusammengestellt und analysiert. Darauf basierend, sowie auf den Ergebnissen des UFOPLAN-Vorhabens zu importierten Erzeugnissen (FKZ: 3707 67 4005), wurde im zweiten Teil des Projekts ein Instrument für die Akteure (Hersteller, Importeure, Händler) in den

Wertschöpfungsketten sowie Vorschläge zur Verbesserung der generellen Kommunikation in der Wertschöpfungskette erarbeitet.

Die Machbarkeitsstudie hatte zum Ziel, die Kommunikation über Stoffe in Erzeugnissen entlang der Lieferkette zu verbessern. Sie besteht aus einer Analyse der existierenden Informations-und Kommunikationsinstrumente über Stoffe in Erzeugnissen sowie einer Analyse der Mitteilungspflichten über Stoffe in Erzeugnissen unter REACH, einschließlich einer Beschreibung der erforderlichen Informationen, um Produktaufgaben zu erfüllen. Des Weiteren wurden ein IT-basiertes Kommunikations-Tool (SVHC-Communicator) und eine Anleitung entwickelt, wie die Kommunikation auf Artikel aussehen könnte (Leitfaden SVHC-Kommunikation). Die Anleitung zur Kommunikation wird als separates Dokument neben dem Abschlussbericht zur Verfügung gestellt. Schließlich werden im Abschlussbericht Beispiele bereitgestellt, um zu veranschaulichen, welche Informationen übermittelt und/oder erhalten werden sollten.

Der aktuelle Bericht beschreibt, welche Informationen in den Lieferketten weitergeleitet werden sollten, damit alle Akteure - als Arbeitgeber und als Inverkehrbringer (Hersteller Verantwortung) - ihren Verpflichtungen im Rahmen von REACH erfüllen können. Grundlegende Erfüllung der REACH-Pflichten erfordert die Weiterleitung der Namen von SVHC der Kandidatenliste in Erzeugnissen. Die Einhaltung von Artikel 7 (2) der REACH-VO (Meldung vom SVHC in Erzeugnissen) erfordert jedoch, dass auch Informationen über die Konzentrationen und Mengen von Kandidatenstoffen kommuniziert werden. In der Praxis werden jedoch viel mehr Informationen benötigt. Zum Einen, um Inverkehrbringer/Hersteller von Erzeugnissen zu unterstützen, ihre Arbeitgeberpflichten zu erfüllen. Zum Anderen, damit Inverkehrbringer/Hersteller ihrer Verantwortung gerecht werden können, Informationen über alle Stoffe (nicht nur die Kandidatenstoffe), einschließlich Informationen über ihre (Öko-) Toxizität, Mobilität sowie die Nutzungsbedingungen und potenzielle Risiken, bereit zu stellen.

Mitteilungen über Stoffe in Erzeugnissen sollten praktikabel sein und die Rollen von Akteuren in den Liefer-/Wertschöpfungsketten berücksichtigen. Es sollte Flexibilität bezüglich der Detailtiefe der Informationen zu verschiedenen Stoffe bestehen, so dass unterschiedliche Ebenen an Beteiligungsgraden oder von legale Anforderungen der verschiedenen Lieferketten berücksichtigt werden können. Das gleiche gilt für die Arten der übermittelten Informationen. Ein universelles Kommunikations-Tool für Stoffe in Erzeugnissen sollte in der Lage sein bestehende Tools wie IMDS zu integrieren oder mit diesen kompatibel sein.

Der Informationsgehalt der Kommunikation zu Erzeugnissen variiert je nach dem Kommunikationsempfänger und der Position der Inverkehrbringer/Hersteller von Erzeugnissen in den Liefer-/Wertschöpfungsketten. Daten zu den Stoffeigenschaften sind durch die Registrierungen unter REACH über ECHA-Datenbank zu registrierten Stoffen erhältlich. Allerdings müssen diese Daten gezielt extrahiert und interpretiert werden. Die Kommunikation über Sicherheitsdatenblätter stellt nicht vollständig sicher, dass die Formulierer die entsprechenden Angaben an die Inverkehrbringer/Hersteller von Erzeugnissen weitergeben. Generierte Informationen zu Verwendungen und potenziellen Risiken können auch - in unterschiedlichem Maße - in der ECHA-Datenbank zu registrierten Stoffen vorhanden sein. Diese Art von Informationen sollte und könnte entlang der Liefer-/Wertschöpfungsketten durch die Inverkehrbringer/Hersteller von Erzeugnissen verfeinert werden, da sie mehr Informationen über die tatsächliche Nutzung haben und somit potenzielle Risiken besser einschätzen können.

In dieser Studie wurde ein "umfassender Datensatz" entwickelt, der die Kommunikation über alle relevanten Aspekte von Stoffen in Erzeugnissen im Hinblick auf die gesetzlichen Anforderungen unter REACH, einschließlich der Kommunikation von Informationen für eine sichere Handhabung von Erzeugnissen, gewährleistet. Darüber hinaus unterstützen und erleichtern die hier erarbeiteten umfassenden Datensätze - insofern zugänglich für den Inverkehrbringer/Hersteller von Erzeugnissen - die Einhaltung anderer

gesetzlicher Verpflichtungen sowie die volle und informierte Verantwortung der Inverkehrbringer/Hersteller für die auf den Markt gebrachten Erzeugnisse.

Nicht alle Informationen die zu einem Stoff erhältlich sind, müssen notwendigerweise auch weitergegeben werden. Allerdings ist der Bedarf an bestimmten Daten weitgehend von der Gefährlichkeit eines Stoffes und der Art des betreffenden Erzeugnisses ab. Daher werden von dem erstellten umfassenden Daten-Set zu möglichen Informationen von Stoffen, im Anwendungsfall wahrscheinlich nur ausgewählte Informationen tatsächlich benötigt und somit in der Lieferkette kommuniziert. In dem skizzierten Kommunikationsmodell wird für jeden Informationsbaustein sowie für alle Akteure der Liefer-/Wertschöpfungsketten indiziert, welche Informationen sie erhalten und welche sie weiterleiten sollten. Der erstellte umfangreiche Datensatz wurde in mit Interviews mit Interessenvertretern und in einer ersten beispielhaften Praxisuntersuchung bewertet.

Die befragten Akteure wiesen darauf hin, dass die aktuelle Kommunikation über Kandidatenstoffe in Erzeugnissen auf die Identifizierung des Namens des SVHC begrenzt ist. Sie gaben an, dass die Angaben zu den Gründen, warum SVHC in Erzeugnissen enthalten sind, mögliche Folgen (Risiken) für Arbeitnehmer und Verbraucher sowie Hinweise zum Abfallmanagement hilfreich wären, damit sie ihre Aufgaben erfüllen können. Dennoch wird das "umfassende Daten-Set" als zu umfangreich für eine überschaubare Kommunikation in den Liefer-/Wertschöpfungsketten angesehen. Die theoretische Analyse der Befragung ergab, dass die meisten Informationen entweder durch die REACH-Registrierung oder durch die Akteure in den Liefer-/Wertschöpfungsketten verfügbar sind. Nur einige Informationen stehen überhaupt nicht zur Verfügung, wie z. B. spezifische Migrationsraten.

Basierend auf dem Leitfaden SVHC-Kommunikation wurde im Projekt ein IT-Tool (SVHC-Communicator) programmiert. Diese Web-basierte Anwendung, führt den Anwender durch die Fragen und Abläufe, die in dem Leitfaden SVHC-Kommunikation festgelegt sind. Die Anwendung des SVHC-Communicators mündet in die Zusammenstellung der Kommunikationsmodule, die den Akteuren spezifisch zur Verfügung gestellt werden sollten. Die Auswahl der Kommunikationsmodule hängt davon ab, ob und welche Risiken auftreten könnten oder welche Informationen benötigt werden, um eine gute Praxis zu erfüllen und es den Akteuren zu ermöglichen, die Pflichten hinsichtlich der chemischen Sicherheit von Erzeugnissen zu erfüllen. Der SVHC-Communicator, wie der Leitfaden SVHC-Kommunikation, beschränkt sich nicht auf Kandidatenstoffe unter REACH, sondern kann für jeden bedenklichen Stoff bei der Herstellung von Erzeugnissen verwendet werden. Der SVHC-Communicator ist in einer Website integriert, die grundlegende Informationen über die REACH-Anforderungen, die Definition von SVHC gemäß REACH Artikel 57 und das hier durchgeführte Projekt bietet. Der Leitfaden SVHC-Kommunikation und die Projektberichte können von der Website heruntergeladen werden, auf der auch der SVHC-Communicator verfügbar ist: http://svhc-in-articles-communication.de/

Insgesamt zeigt das Projekt, dass verschiedene Arten von Informationen erforderlich sind, damit alle Akteure in der Lieferkette ihre Substanz-bezogene Verantwortung für Artikel übernehmen können. Jedoch kann in der Praxis nur eine begrenzte Menge von Informationen nötig, abhängig von der Beschaffenheit des Erzeugnisses sowie den enthalten Substanzen. Im Allgemeinen wäre es hilfreich, Informationen über die Kandidatenstoffe, die Kommunikation unter REACH Art. 33 nötig sind in einem zentralen Dokumente oder einer zentralen Datenbank zusammenzustellen, um diese allen Akteuren zur Verfügung zu stellen. Diese Informationen können dann von allen Akteuren abgerufen werden und müssten nicht in der Liefer-/Wertschöpfungskette kommuniziert werden. Zudem könnte die Kommunikation über Stoffe in Erzeugnissen über die derzeitige Praxis, lediglich den Stoffnamen mitzuteilen, hinausgehen, indem akteurs- oder fallspezifische Module (Infopakete) strukturiert werden. Welche Informationspakete die Akteure verwenden sollten, kann durch das IT-Tool bzw. den Leitfaden SVHC-Kommunikation erarbeitet werden.

2 Executive summary

The feasibility study on communication on substances in articles along the supply chain consists of an analysis of existing information and communication tools on substances in articles and an analysis of communication obligations on substances in articles under REACH, including a description of information needed to fulfil product responsibilities. Furthermore, an IT-based communication tool and guidance are developed illustrating how communication on articles could look like. The guidance is provided as separate document. Finally, examples of which information should be communicated and how it could be obtained are provided.

The current report outlines which information should be forwarded in the supply chains to enable all actors to fulfil their obligations under REACH, as employers and as placers on the market (producer responsibility). Mere REACH compliance requires forwarding the name of SVHCs on the candidate list in articles. Compliance of article with Article 7(2) of REACH (notification of SVHC in article) however requires that also information on the concentrations and amounts of candidate substances is communicated. Much more information is needed to support article producers to fulfil their employers' obligations and to take their producer responsibility, such as information on all hazardous substances (not only the candidate substances) including information on their (eco-)toxicity, mobility and the conditions of use and potential exposures.

Communication on substances in articles should be practicable and take account of the supply chain roles of actors. There should be flexibility in which substances are covered, so that different levels of ambition or legal requirements of different supply chains can be accommodated. The same applies to the information types communicated. A universal communication tool for substances in articles should be able to integrate or be compatible with existing tools, such as the IMDS. Therefore, a communication concept that separates the information content to be communicated from the mode of transportation is preferred.

The information content of communication on articles varies depending on the aim of communication and the supply chain position of the article producers. Data on substance properties is available from REACH registration via ECHA's database of registered substances. However, this data must be specifically extracted and interpreted. The communication via SDS does not fully ensure that formulators pass on the relevant information to the article producers. Generic information on uses and potential exposures may be available to a varying degree in ECHA's database of registered substances from registrations as well. This type of information should and could be refined along the supply chain by the article producers, as they have more information on the actual use and can better estimate potential exposures.

In this study, a "comprehensive data set" is developed which would enable communication on all relevant aspects of substances in articles with regard to the legal requirements under REACH, including communication of information to ensure safe handling of articles. Furthermore, the comprehensive data set, if available to the article producers, would support and facilitate compliance with other legal obligations as well as taking full and informed producer responsibility for the products placed on the market. However, not all information is always needed but the actual data needs largely depend on the hazardousness of a substance and the type of article concerned. Therefore, of the list of information pieces in the comprehensive data set, only some are likely to be actually needed and hence to be communicated in the supply chain. In the outlined communication model, for each piece of information it is indicated for all supply chain actors which information they should receive and what they should forward. The comprehensive data set was critically reviewed with stakeholder interviews and a first exemplification.

The interviewed stakeholders indicated that the current communication on candidate substances in articles is limited to the identification of the name of SVHCs. They pointed out that information on the reasons why SVHC are included in articles, the possible consequences (risks) for workers and consumers as well as waste management advice would be helpful for them to fulfil their tasks. Nevertheless, the “comprehensive data set” is viewed as too extensive for a manageable supply chain communication. From the theoretical analysis it can be concluded that most information is either available from registration or at the actors in the supply chain. Only some information may not be available at all, such as specific migration rates.

Based on the guidance document an IT-tool was programmed at the end of the project. The web-based application guides the users through the questions and workflows laid out in the guidance documents. It presents the communication modules that should be provided to the customers. The selection of communication modules depends on whether or not and which risks could occur or which information is regarded as good practice to fulfil and enable the customers to fulfil the producer responsibilities regarding the chemical safety of articles. The tool, as the guidance, is not limited to candidate substances under REACH but can be used for any substance of concern used in the production of articles. The web-tool is integrated into a website that provides basic information on the REACH requirements, the definition of SVHC according to REACH Article 57 and the project. The guidance and reports can be downloaded from the website as well. The tool is available at: http://svhc-in-articles-communication.de/

It can be concluded that several types of information are needed to generally enable all actors in the supply chain to take all of their substance-related responsibilities for articles. However, in the actual case, only a limited set of information may be needed, depending on the type of article and the substances contained. In general it would be helpful to compile information on the candidate substances which are relevant for Art. 33 communication in a central document or database to make it available to all actors. This information could then be accessed by all actors and wouldn’t have to be communicated in the supply chain. Secondly, the communication on substances in articles exceeding the current practice of only informing on substance names could be structured in actor specific or case specific modules (information packages). Which information package to use could be explained as part of the guidance.

3 Introduction

This report contains the results of work packages 1 to 3 following the respective term of references for the project. As laid down in the terms of reference as well (Work Package 4), a guidance document supporting communication on substances in articles in accordance with the interpretation of the Dissenting Member States on the reference of the 0.1% threshold in articles[1] was developed and annexed to this report. This guidance was implemented as IT-tool, too.

This report is based on the interim reports of the project and is separated into the following main parts:

1) The results from an assessment regarding available communication tools on SVHC in different industry sectors and supply chains. (Section 4).
2) Definition of communication requirements (Section 5), indicating the REACH obligations and the information needed for all actors in the supply chain to fulfil their producer responsibility.
3) Outline of a communication concept on hazardous substances in articles (Section 6.6) serving the purpose of enabling and supporting all market actors placing articles on the EU-market to comply with the requirements of REACH Art. 33 and fulfil the obligations as employers or for environmental legislation and live up to their role and obligations in the context of the producer responsibility.
4) Description of the "comprehensive data set" for communication on hazardous substances in articles which is needed for REACH compliance with Art. 33 and which enables all article producers to take their producer responsibility (Section 6)
5) Introduction to the guidance document developed in Work Package 4 on communication on hazardous substances in articles
6) Practical experience with the data fields (Sections 10, 11 and 12)
7) Conclusions from the project work and possible future actions on communication on hazardous substances in articles (Section 13).

[1] The Dissenting Member States interpret the 0.1% threshold for candidate substances in articles as applying to that article into which the SVHC is included for the first time. That article does not cease to be a defined article once it is merged with other articles (once an article always an article approach) and hence, the concentration of the candidate substance is not diluted when several articles are merged to a complex article.

4 Core definitions

In the following, core definitions and terms used in this document are described to facilitate reading and avoid misunderstandings.

> *REACH article 3.4 "producer of an article: means any natural or legal person who makes or assembles an article within the Community;"*

This definition among others clarifies that actors who „only" assemble articles from different components or materials are article producers and hence have to fulfil potential communication requirements.

> *REACH Article 3.33. "supplier of an article: means any producer or importer of an article, distributor or other actor in the supply chain placing an article on the market;"*
>
> *REACH article 34. "recipient of a substance or a mixture: means a downstream user or a distributor being supplied with a substance or a mixture"*

This also includes article producers using substances or mixtures to produce an article.

> *REACH article 35." recipient of an article: means an industrial or professional user, or a distributor, being supplied with an article but does not include consumers;"*

The following abbreviations are used in this document to address the different actors:

- M/I is the manufacturer or importer of candidate substances / SVHCs.
- F are the formulators who use candidate substances / SVHCs to produce mixtures which are either intended for use in further mixtures or for direct use in/on an article.
- AP are the article producers which are further divided into three types of actors
    - producers of first-time articles (AP-FTA),
    - producers of interim articles (AP-IA) and
    - producers of final articles (AP-FA).

This separation of article producers aims to take account of complex supply chains (c.f. Section 7.1).

Importers and retailers of articles are not separately addressed in order to reduce complexity. This document and the guidance suggest that article importers should regard themselves as producers of first-time articles and article retailers as producers of final articles when analysing their legal obligations and communication needs.

The following terms are used to address substances for which communication may occur if they are contained in articles:

- **Candidate substances** (CS): substances with SVHC properties according to REACH Article 57 which are included in the candidate list for authorization.
- **Substances of very high concern** (SVHC): substances which fulfil the criteria of REACH Article 57 but are not on the candidate list for authorization and candidate substances.
- **Hazardous substances** (HS): substance which fulfil any of the criteria for classification as hazardous according to the CLP-Regulation plus non-classified CS and SVHC (e.g. vPvB substances or endocrine disrupters).

In this document and in the guidance, the term SVHC is used because it includes all substances of high concern for which communication is regarded as high priority. This also emphasise that communication should not be limited to candidate substances and mere legal compliance but should be regarded as necessary tool to manage risks from articles. Furthermore, it underlines that the chosen approach supports communication on any substance in articles.

5 Analysis of existing instruments

5.1 Introduction

There is already a quite diverse range of instruments for communication on substances in articles. Some of them include information on substances of very high concern. These instruments have different aims and scopes and can – according to Kogg & Thidell (2010) – be classified into the following groups:

- Instruments for communication within the supply-chain;
- Instruments for producer to consumer communication;
- Instruments for producer to end-of-life management communication;
- Instruments for communication from external stakeholders to consumers and the general public;
- Initiatives for communication between external stakeholders and supply-chain actors.

In order to filter out the most relevant systems for the reporting format on SVHC, the following two steps have been performed:

1. Identification of all instruments from main publications and recent research work.
2. Screening for key instruments related to reporting on SVHC in articles.

Step 1: Identification of instruments for the communication on substances in articles

In the first step, all instruments were listed which are described in the following publications:

- Kogg & Thidell 2010 (22 instruments)
- Massey et al. 2008
- UNEP 2011 / SAICEM: Synthesis of findings

In addition, other instruments identified during the project work were included. (R&D Project "Analysis of implementation of requirements of REACH Article 7 related to imported articles", Ökopol, FKZ 3707 67 4005; R&D Project "Interfaces between REACH and other article-related substance regulations", Öko-Institute, FKZ 206 67 460/04). Table 1 gives an overview on all instruments which have been identified in this step.

Table 1 Overview and classification of existing instruments for the communication on substances in articles

Communication tool
I. Inter-chain information systems
Ref1_ Global Automotive Declarable Substance List (GADSL)
Ref2_International Material Data System (IMDS)
Ref3_Japan Automotive Manufacturers Association (JAMA) Japan Auto Parts Industries Association (JAPIA)
Ref4_Joint Industry Guide for Material Composition for Electronics Products (JIG)

Communication tool
Ref5_IPC 175x Standards (IPC-1751A & IPC-1752A)
Ref6_Standard IEC TC3
Ref7_Standard IEC TC93
Ref8_Material Declaration for Electrical and Electronic Equipment IEC TC111
Ref9_Public Available Specification (PAS)
Ref10_Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products
Ref11_Standard International Electrochemical Commission (IEC) 62474
Ref12_BOMcheck
Ref13_Umbrella Specs
Ref14_RosettaNet
Ref15_EFSOT
Ref16_Global Data Synchronization Network (GDSN)
Ref17_Joint Article Management Promotion Consortium (JAMP)
II. Producer - consumer / customer information
Ref18_California´s Proposition 65
Ref19_Interstate Mercury Education and Reduction Clearinghouse (IMERC)
Ref20_Toy Safety Certification Program (TSCP)
Ref21_Electronic Product Environmental Assessment Tool (EPEAT)
Rev22_Environmental Product Declarations
Ref23_Building Material Declaration
Ref24_BASTA
Ref25_ÖKO-TEX
Ref26_Eco-Labels (ISO 14024)
Ref27_CE-mark
III. Producer to End-of-life information
Ref28_Association for Electronic Home Appliances (AEHS) Japan
Ref29_EU Battery Directive
Ref30_EU Ecodesign Directive
IV. External stakeholder to consumers/customers and general public
Ref31_Arnika
Ref32_GoodGuide
Ref33_Healthy Stuff
Ref34_Pharos Project
Ref35_Skin Deep
V. External stakeholders to supply chain actors
Ref36_ChemSec´s SIN List
Ref37_European Trade Association List
Ref38_Master List
Ref39_RSL T AFAA
Ref40_Chemicall
Ref41_SubsPort
Ref42_US EPA Design for Environment Program
Ref43_RAPEX
Ref44_Green Procurement Guides and manuals
Ref45_REACH_IUCLID_5_dossier_on_substances_in_articles-reporting-format

Many of the instruments listed above have a specific focus on certain product groups or industries (e.g. electronics industry, automotive industry, building materials) and are tailored to the specific needs of these sectors. While some of these instruments foresee a comprehensive assessment of all substances of an article, others solely focus on substances regulated within the EU or other regions (Lists of restricted substances,

LRS / RSL). Furthermore, there are systems that provide generalised product data only. These systems typically provide information on whether certain substance concentrations are below or above certain threshold levels (e.g. ecolabels).

Step 2: Screening for key instruments related to reporting on SVHC in articles.

In the screening process, the key criteria for further analysis was the capability of the instrument to enable the communication on specific substances within the supply-chain, as this is the key focus of this study. For each instrument, a short characterisation has been made regarding the following items:

- *Type of communication instrument*. Several instruments can be used as communication tools. Often lists of restricted substances are communicated. In some sectors reporting formats are used. In rare cases, complex data bases have been established. More often, associations develop technical norms and specifications which can be implemented in different tools. In addition, legislation, voluntary labels or design guidance are used for communication on problematic substances. The second column in Table 7 gives a first indication of the type of instrument.
- *Industry/ Product group*. Communication instruments can be sector specific (e.g. the well-known IMDS of the automotive sector), or suitable for different branches. This is indicated in the third column of Table 2.
- *Source for a short description of the instrument*. For instruments which are analysed in depth, additional references can be found in Section 5.2.
- *Additional comments related to the relevance of the instrument for our study*. Instruments are analysed more in depth if they are closely linked to the reporting of substances of very high concern in the supply chains or if they show elements important for the reporting format.

Table 2 shows the result of the first characterisation. Instrument with high relevance are **marked in bold** in the first column.

Table 2: Overview and classification of existing instruments for the communication on substances in articles

Communication tool	*Type of communication instrument*	*Industry / product group*	*Information source*	*Comments*
I. Inter-chain information systems				
Ref1_ Global Automotive Declarable Substance List (GADSL)	Substance list	Automotive sector	K&T 2010, p. 26	Relevant for further analysis
Ref2_International Material Data System (IMDS)	Substance list + data entry template + database	Automotive sector	K&T 2010, p. 8	Relevant for further analysis
Ref3_Japan Automotive Manufacturers Association (JAMA) Japan Auto Parts Industries Association (JAPIA)	Substance list + data entry template	Automotive sector	K&T 2010, p. 9	Relevant for further analysis
Ref4_Joint Industry Guide for Material Composition for Electronics Products (JIG)	Substance list	Electrical and electronics industry	K&T 2010	Relevant for further analysis
Ref5_IPC 175x Standards (IPC-1751A & IPC-1752A)	Standards on information exchange requirements for substances within supply-chains	Electrical and electronics industry	K&T 2010, p. 9	Relevant for further analysis
Ref6_Standard IEC TC3	Technical Norm	Electrical and electronics industry	Only limited information available, partly not yet published, covered by IPC 175x standards	
Ref7_Standard IEC TC93				
Ref8_Material Declaration for				

Communication tool	*Type of communication instrument*	*Industry / product group*	*Information source*	*Comments*
Electrical and Electronic Equipment IEC TC111				
Ref9_Public Available Specification (PAS)				
Ref10_Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products				
Ref11_Standard International Electorchemical Commission (IEC) 62474				
Ref12_BOMcheck	Substance list + data entry template + database	Electrical and electronics industry	K&T 2010, p. 11	Relevant for further analysis
Ref13_Umbrella Specs	Standardised format to provide information on substances and materials in electronic components	Electrical and electronics industry	See 2.2.7	Relevant for further analysis
Ref14_EFSOT	Material declaration	Soldering industry/technologies	Similar to Umbrella Specs, less data available	
Ref15_RosettaNet	Various standard documents that aim to facilitate interoperability of business processes across global supply chains	Open to all industries. In fact, strong focus on electronics industry.	K&T 2010	Relevant for further analysis
Ref16_Global Data Synchronization Network (GDSN)	System to exchange various types of product related information within supply chains in a standardised structure and data-format.	All types of finished products for sale to private and corporate consumers. Semi-finished products are not covered.	K&T 2010	Relevant for further analysis
Ref17_Joint Article Management Promotion Consortium (JAMP)	Substance list + data entry template	Chemical industry, electronics industry, metal industries and others	K&T 2010, p. 10	Relevant for further analysis
II. Producer - consumer / customer information				
Ref18_California´s Proposition 65	Regulation for Safe Drinking Water	Industry/businesses	K&T 2010, p. 12	Not relevant - too limited to a specific scope
Ref19_Interstate Mercury Education and Reduction Clearinghouse (IMERC)	Database	Articles containing mercury	K&T 2010, p. 13	Not relevant – tailored to only one substance (mercury)
Ref20_Toy Safety Certification Program (TSCP)	Results of hazards analysis with a view to the use-phase	Toys	K&T 2010, p. 13	Not relevant – focus on hazards and risks rather than on substances
Ref21_Electronic Product Environmental Assessment Tool (EPEAT)	Voluntary labelling scheme	Electrical and electronics industry	K&T 2010, p. 14	Not relevant – only information that a product fulfils certain criteria. No quantitative information on substances
Rev22_Environmental Product Declarations	Format to display environmental product information	Industry/businesses in general	K&T 2010, p. 14	Relevant for further analysis
Ref23_Building Material Declaration	Database	Building material industry	K&T 2010, p. 15	Not relevant – information in Swedish only
Ref24_BASTA	Criteria list + database	Building material industry	K&T 2010, p. 15	Relevant for further analysis

Communication tool	*Type of communication instrument*	*Industry / product group*	*Information source*	*Comments*
Ref25_ÖKO-TEX	Voluntary labelling scheme	Textile industry/products	K&T 2010, p. 15	Not relevant – only information that a product fulfils certain criteria. No quantitative information on substances
Ref26_Eco-Labels (ISO 14024)	Voluntary labelling scheme	Various industries	K&T 2010, p. 16	Not relevant – only information that a product fulfils certain criteria. No quantitative information on substances
Ref27_CE-mark	EU Product Labelling	All types of finished products for sale to private and corporate consumers. Semi-finished products are not covered.	Not relevant – only information that a product is compliant with European legislation. No quantitative information on substances	
III. Producer to End-of-life information				
Ref28_Association for Electronic Home Appliances (AEHS) Japan	Product assessment manual	Home appliances recycling	K&T 2010, p. 17	Not relevant - the system provides a product assessment manual only.
Ref29_EU Battery Directive	Product specific legislation	Batteries	K&T 2010, p. 17	Not relevant – focus on one particular product group only.
Ref30_EU Ecodesign Directive	Product specific minimum requirements (partly affecting product information issues)	Producers of energy-using products (except from vehicles)	K&T 2010, p. 18	Not relevant – strong focus on energy-use. Chemicals are not a major focus in the Ecodesign implementation process.
IV. External stakeholder to consumers/customers and general public				
Ref31_Arnika	Database	PVC and plasticizer	K&T 2010, p. 18	Multi criteria assessment, chemicals are only one aspect
Ref32_GoodGuide	Database	Private consumers	K&T 2010, p. 19	
Ref33_Healthy Stuff	Database	Products for general public	K&T 2010, p. 20	
Ref34_Pharos Project	Database and Standardised information template	Building materials	K&T 2010, p. 20	Declaration that product fulfils specific quality criteria
Ref35_Skin Deep	Database	Cosmetic and personal care products	K&T 2010, p. 21	Multi criteria assessment
V. External stakeholders to supply chain actors				
Ref36_ChemSec´s SIN List	List of substances	Not sector specific	K&T 2010, p. 22	Proposals for enlargement of candidate list
Ref37_European Trade Association List	List of substances	Not sector specific	t.b.a.	
Ref38_Master List	List of substances	Not sector specific	UBA 2011	Compilation of problematic substances
Ref39_RSL T AFAA	List of restricted substances	Apparel and foot wear	K&T 2010, p. 22	Similar to LRS in electronic industry
Ref40_Chemicall	Database	Textile industry	K&T 2010, p. 23	Information on chemicals and materials / in Swedish only
Ref41_SubsPort	Substitution of substances	Not sector specific	Liβner 2011	Information on substance properties

Communication tool	*Type of communication instrument*	*Industry / product group*	*Information source*	*Comments*
				and guidance for substitution
Ref42_US EPA Design for Environment Program	Label	Not sector specific	K&T 2010, p. 21	Criteria for product label
Ref43_RAPEX	Alarm system	Not sector specific	K&T 2010, p. 21	Information on products which might be a health risk
Ref44_Green Procurement Guides and manuals	Guidance	Many sectors	K&T 2010, p. 21	Cover different ecological criteria
Ref45_REACH_IUCLID_5_dossier_on_sub-stances_in_articles	Reporting format	General	REACH, IUCLID 5	Notification format for ECHA, see WP 2

5.2 In depth-analysis of intra-supply-chain instruments

The analysis of Section 5.1 yielded ten instruments, which explicitly address the communication on substances in articles within supply-chains. All of these instruments are analysed in more detail here. In addition, two instruments have been found which show interesting elements useful for the required reporting format: environmental product declarations (EPDs) and BASTA. They are analysed more in depth, too.

The following instruments are described more in detail:

Table 3: Instruments for communication on substances in articles that were analysed in detail

1	Global Automotive Declarable Substance List (GADSL)
2	International Material Data System (IMDS)
3	The JAMA/JAPIA Standard Material Datasheet
4	Joint Industry Guide for Material Composition for Electronics Products (JIG)
5	IPC 175x Standards
6	BOMcheck
7	Umbrella Specs
8	Joint Article Management Promotion Consortium (JAMP)
9	Environmental Product Declarations (EPDs)
10	BASTA
11	RosettaNet
12	Global Data Synchronisation Network (GDSN)

The analysis refers to the following points:

- *Type of communication instrument* (list of substance, data base, product declaration, see Section 5.1)
- *Institution / Owner of the instrument*. Frequently, the instruments have been developed by industry associations in an European or international cooperation.
- *Industry group / product group*. Most of the instruments developed so far are used in the automotive industry or from producers of electric/ electronic products.
- *Complexity of the product group.* Some instruments are specific for sectors with products of high complexity, e.g. automotives or electronic products, consisting of a high number of components. Often, articles of complex composition have complex supply chains.
- *Area*: Applicability of the instruments beyond Europe. Most of the instruments have global applications.
- *Design control*: The term “design control” is used in industries. Design control means: the producer of an article gives a clear description of requirements to be fulfilled by the supply chain. This can go

far beyond functional requirements. It can include detailed criteria excluding the use of restricted substances. Without design control means: the producer or supplier of an article buy his materials on the market without setting detailed requirements related to the design of the product. We use this term to indicate whether an instrument can be used in supply chains even if there is no system leader who cares.

- *Basis:* Reference point to identify the materials or the substances which are covered by the instrument.
- *Target group 1*: provider of information
- *Target group 2*: recipient of information
- *Access & Transparency*. Some instruments give public accessible information on the substances which are covered by the instruments and the assessment criteria used.
- *Costs of use*. In some cases, information is available on the costs for using or sharing the specific instrument.
- *Substance coverage*. This column indicates to which substances/ groups of substances an instrument refers and whether it includes the REACH Candidate List.
- *Data format*. Some instruments are distributed as pdf documents, others are excel files or specific electronic exchange formats.
- *Applicability for REACH.* This column gives information whether the instrument can be used to communicate on SVHC in articles according REACH. In addition, it is indicated whether information on the concentration/ total amount is communicated. If available, it is described whether the information refers to a material, an article or a complex article.
- *Applicability for other industries*. Transfer of instruments from one sector to another could require sector-specific adaptations, e.g. the terminology used, sector specific legislations.
- *Web link*. These references provide additional detailed information.

In the following section, the instruments listed in table 3 are described in more detail.

5.2.1 The Global Automotive Declarable Substance List (GADSL)

The Global Automotive Declarable Substance List was compiled by representatives from the automotive industry (including its supplier base in the chemicals and plastics industries) who are organised in the Global Automotive Stakeholders Group (GASG). The aim of this group was to harmonise the various substance lists that were formally used in the industry, which resulted in the globally harmonised GADSL-list. The list covers substances that are addressed by any substance-specific legislation worldwide and that are expected to be present in materials and parts in vehicles at point of sale. The list currently encompasses 139 substances which are either classified as D ("duty-to declare") or P ("prohibited").

Communication tool	*Global Automotive Declarable Substance List (GADSL)*
Type of communication instrument	Standardised list of substances
Institution	Global Automotive Stakeholders Group (GASG)..
Industry / product group	Automotive industry
Complexity of product group	High
Area	Global application
Design control	The list is used as reference point for the IMDS system. It is a compilation of substances. It could be used as

Communication tool	*Global Automotive Declarable Substance List (GADSL)*
	reference list in other sectors too.
Basis	All types of national and multinational legislation regulating the use of substances relevant for the automotive industry (e.g. Directive 2000/53/EC on End-Of-Life Vehicles, Regulation 1272/2008 EC on classification, labelling and packaging of substances and mixtures. Regulation 1907/2006 EC on REACH, Prohibition of Certain Toxic Substances Regulation in Canada, Japanese Waste Disposal and Cleaning Law)
Target group 1 (provider of information)	Suppliers of vehicle parts and components, including producers of materials used for components.
Target group 2 (recipient of information)	Manufacturers of vehicles + recycler (??)
Access & Transparency	Not relevant here: The list solely provides a common basis for intra-supply-chain communication. The communication itself is mostly carried out via IMDS (see section on IMDS).
Costs of use	The list can be downloaded free of charge
Substance coverage	> 9.0000substances and groups of substances. SVHC are covered by the GADSL-list.
Data format	List available in Excel- and PDF-Format
Applicability for REACH	Yes. The list included REACH SVHC. It is only a list of substances. Further information is communicated in the IMDS tool which uses the GADSL as reference point.
Applicability for other industries	Limited: The list covers only regulated substances relevant for the automotive industry. Regulated substances of other sectors and applications are not covered exhaustively.
Web link	http://www.gadsl.org/

5.2.2 The International Material Data System (IMDS)

The International Material Data System is a system that enables the communication, collection and analysis of the materials used in vehicles and its parts. In contrast to most other intra-supply-chain communication system, IMDS is not restricted to regulated substances, but aims to collect and manage the total material composition of vehicle parts to ultimately enable the calculation and tracking of the total material composition of vehicles. In addition, the system is also linked to the Global Automotive Declarable Substance List (GADSL) to support the proper management of regulated substances.

Communication tool	*International Material Data System (IMDS)*
Type of communication instrument	List of substances Standardised data entry and transmission template Online database
Institution	IMDS (a consortium of vehicle manufacturers). The maintenance of the system is contracted to EDS, a subsidiary of HP.
Industry / product group	Automotive industry
Complexity of product group	High
Area	Global application
Design control	Design control by vehicle manufacturers (VM) Complex tool. It needs training. Suppliers for automobile producers have to use the tool. It is unlikely that such a system would be used in other supply chains without clear request from the customers.
Basis	All materials used in vehicles. To facilitate data entry, the system offers a standardised list of materials. This list makes reference to GADSL for regulated substances.
Target group 1 (provider of information)	Suppliers of vehicle parts and components
Target group 2 (recipient of information)	Manufacturers of vehicles (+ recyclers)
Access & Transparency	Limited to registered users. Suppliers can decide which actors in the system can view their substance data. In addition, suppliers can account up to 10% of a particular component as "confidential" as long as no banned or restricted substances are included in the 10%.
Costs of use	Free of charge for suppliers. Vehicle manufacturers have to pay an annual fee ranging between 100,000 to 500,000 Euros. In addition, vehicle manufacturers pay a one-off fee of 100,000 Euro when they join the system.
Substance coverage	> 9,000. As SVHC are covered by the GADSL-list, the IMDS-system also covers these substances.
Data format	Own digital data format.
Applicability for REACH	Yes. Concentration of the substances is communicated. It is clearly described which materials contain the substances.
Applicability for other industries	HP tries to sell the system to other industries such aircraft, toy and electronics manufacturing. Nevertheless, applying the system to other industries will need adjustments in all modules (list of materials, data entry template, online database). More information under http://www8.hp.com/us/en/services/services-detail.html?compURI=tcm:245-823413&pageTitle=international-materials-data-system#
Web link	https://www.mdsystem.com/magnoliaPublic/de/public/news.html

5.2.3 The JAMA/JAPIA Standard Material Datasheet

The JAMA/JAPIA Standard Material Datasheet is a system composed of a standardised list of substances and a data entry and transmission template. In parallel to IMDS, it is aimed to facilitate a comprehensive assessment and communication of materials used in vehicle parts to enable the calculation and tracking of the total material composition of vehicles. The system is mostly used in Japan and provides an alternative to IMDS. The system is designed in a way that data managed with the tool can also be imported and managed by IMDS.

Communication tool	*JAMA/JAPIA Standard Material Datasheet*
Type of communication instrument	List of substances Standardised data entry and transmission template
Institution	Japan Automobile Manufacturing Association (JAMA) and Japan Auto Parts Industries Association (JAPIA)
Industry / product group	Automotive industry
Complexity of product	High

Communication tool	*JAMA/JAPIA Standard Material Datasheet*
group	
Area	Global application
Design control	Design control by vehicle manufacturers (VM). Complex tool. It needs training. It is unlikely that a similar tool is used in other sectors without strong requests from one actor.
Basis	All materials used in vehicles. To facilitate data entry, the system offers a standardised list of materials. This list makes reference to GADSL for regulated substances. The system is harmonised with IMDS.
Target group 1 (provider of information)	Suppliers of vehicle parts and components
Target group 2 (recipient of information)	Manufacturers of vehicles
Access & Transparency	Limited to registered users. Suppliers can decide which actors in the system can view their substance data.
Costs of use	unknown
Substance coverage	several thousand substances. SVHC are covered by the substance list.
Data format	Excel
Applicability for REACH	Yes
Applicability for other industries	In principle yes, but applying the system to other industries will need adjustments related to the substance list.
Web link	http://www.japia.or.jp/english/datasheet.html

5.2.4 The Joint Industry Guide for Material Composition for Electronics Products (JIG)

The Joint Industry Guide for Material Composition Declaration for Electronics Products is a standardised list of materials that suppliers are asked to disclose by electronic equipment manufacturers when present in products and components.

Communication tool	*Joint Industry Guide for Material Composition for Electronics Products (JIG)*
Type of communication instrument	Standardised list of substances
Institution	Consumer Electronics Association
Industry / product group	Electrical and electronics industry
Complexity of product group	High
Area	Global application
Design control	No design control. The list is used as reference point for the IMDS system. It is a compilation of substances. It could be used as reference list in other sectors too.
Basis	Originally based on Directive 2002/95/EC (RoHS-Directive), but later extended to Regulation 1907/2006 EC (REACH) and also to other substances that are regulated by other legislation within or outside the EU.
Target group 1 (provider of information)	Manufacturers of components for electronic products (interim articles)
Target group 2 (recipient of information)	manufacturers of electronic products (final articles)
Access & Transparency	Not relevant here: The list solely provides a common basis for intra-supply-chain communication.
Costs of use	The guide can be downloaded free of charge.
Substance coverage	The list covers 58 materials and substances in Annex A and an extensive list of substances in Annex B to further specify Annex A. The 58 materials are further classified in three groups: Group R (regulated), Group A (For assessment only), Group I (for information only). SVHC are covered by the JIG-list.
Data format	The guide is available in pdf-format

Communication tool	*Joint Industry Guide for Material Composition for Electronics Products (JIG)*
Applicability for REACH	The guide is explicitly designed and updated to life-up to the information requirements of the RoHS Directive and REACH
Applicability for other industries	Limited: The list covers only regulated substances relevant for the electronics industry. Regulated substances of other sectors and applications are not covered exhaustively.
Web link	http://www.ce.org/Standards/browseByCommittee_6365.asp

5.2.5 The IPC 175x Standards

The IPC 175x Standards lay out the basis for substance data exchange between companies of supply-chains in the electronics industry. In contrast to the established system of the automotive industry (IMDS), the standards do not focus on one particular software solution for data entry and exchange, but only specify the data structure and format. This has the advantage that data exchange can be implemented with different (and partly competing) software solutions without generating problems related to data structure and format.

Communication tool	*IPC 175x Standards*
Type of communication instrument	Series of standards establishing information exchange requirements regarding substances and materials within supply-chains. In particular, IPC 1752 defines the structure and format for collecting and reporting material and substance data.
Institution	Association Connecting Electronics Industries (IPC)..
Industry / product group	Electrical and electronics industry
Complexity of product group	High
Area	Global application
Design control	The standards can be implemented in different formats. It is not required to use a specific template.
Basis	Joint Industry Guide for Material Composition for Electronics Products (JIG)
Target group 1 (provider of information)	Manufacturers of components for electronic products (interim articles)
Target group 2 (recipient of information)	Manufacturers of electronic products (final articles)
Access & Transparency	Not relevant here. Standards are freely available after registration. They contain no data. Information on substances is exchanged on a bilateral basis between manufacturer and supplier. It is up to the participating companies to decide if and how to make the information transparent.
Costs of use	Standards are freely available after registration.
Substance coverage	System designed on IPC 175x Standards are built modularly according to the information requirements: While it can be used to inform on the six RoHS-substances only, it can also be used to collect comprehensive information on all substances listed in the Joint Industry Guide (JIG) as well as on manufacturing. The SVHC candidate list is covered by the Joint Industry Guide.
Data format	Extensible Mark-up Language (XML)
Applicability for REACH	The system is explicitly designed to facilitate compliance with the RoHS Directive and REACH. Information can be provided on amount and concentration of substances in a specific material.
Applicability for other industries	Limitations regarding the JIG substance list (see section on JIG).
Web link	http://www.ipc.org/ContentPage.aspx?PageID=Materials-Declaration

5.2.6 BOMcheck

BOMcheck is a declaration tool that covers regulatory restricted and declarable substances relevant for electrical and electronic equipment. It comprises a “restricted and declarable substances list" and a data entry template that is linked to an online database. While the system is usually used to communicate on regulated substances only, it also provides the possibility to communicate total material compositions of articles. This

tool is called “Full Material Declaration”. BOMcheck is one of the existing implementation tools for the IPC 175x Standards (in particular 1752A)[2].

Communication tool	*BOMcheck*
Type of communication instrument	List of substances Standardised data entry and transmission template Online database
Institution	The BOMcheck initiative is led by the European trade association COCIR and delivered by international environmental consultancy ENVIRON with technical support from web application specialist Blubolt.
Industry / product group	Medical Devices, Electrical and electronics industry
Complexity of product group	High
Area	Global application
Design control	It can be used in sectors without strict requirements on content and format of communication. However, in the supply chain on medical devices the manufacturers of the final devices make restrict descriptions of product specifications to their suppliers.
Basis	Closely related to JIG RoHS (2002/95/EC), REACH (1907/2006 EC), battery directive (2006/66/EC), packaging directive (1994/62/EC)
Target group 1 (provider of information)	Manufacturers of components for electronic products (interim articles)
Target group 2 (recipient of information)	Manufacturers of electronic equipment (producer of final articles)
Access & Transparency	Information on substances can only be accessed by parties that are granted access by the relevant supplier/producer.
Costs of use	A supplier account costs 300 Euros per year. Producers using the system for information management use it for free.
Substance coverage	BOMcheck is based on a "restricted and declarable substances list" covering 88 substances and substance groups. SVHCs are covered by the "restricted and declarable substances list".
Data format	Own digital data format.
Applicability for REACH	The system was explicitly designed to facilitate compliance with European regulations affecting the electronics industry (RoHS; REACH).
Applicability for other industries	Limited: The list covers only regulated substances relevant for the electronics industry. Regulated substances of other sectors and applications are not covered exhaustively.
Web link	http://www.bomcheck.net/

5.2.7 The Umbrella Specifications (U-Specs)

Umbrella Specifications are datasheets providing information on the total material composition of electronics parts like semiconductors, passive components and connectors. The datasheets are compiled according to a format specified by the German Electrical and Electronic Manufacturers Association (ZVEI).

Communication tool	*Umbrella Specifications (U-Specs)*
Type of communication instrument	Standardised format to provide information on substances and materials in electronic components
Institution	German Electrical and Electronic Manufacturers Association (ZVEI)
Industry / product group	Electrical and electronics industry
Complexity of product group	High

[2] See: http://members.ipc.org/committee/other/2-18b_o_1752ASolutionProviders_03282011.pdf

Communication tool	*Umbrella Specifications (U-Specs)*
Area	Global application
Design control	It can be used in sectors without strict requirements on content and format of communication.
Basis	No specific basis. The system is a framework/format to provide information on total materials composition of electronic components in a standardised manner.
Target group 1 (provider of information)	Suppliers of components
Target group 2 (recipient of information)	Electronics manufacturers, recyclers
Access & Transparency	Some existing Umbrella Specs for individual electronic components can be accessed on http://www.zvei.org/index.php?id=1158
Costs of use	Free of charge
Substance coverage	No specific substance coverage: Umbrella Specs provide a framework for the total material composition of electronic devices. Coverage of SVHC depends on the quality of data assessment and entry.
Data format	Filled-out Umbrella Specs are available in pdf-format.
Applicability for REACH	Umbrella Specs provide information on total material composition of electronic parts. Therefore concentrations of regulated substances can be identified on a component basis.
Applicability for other industries	Yes
Web link	http://www.zvei.org/index.php?id=1158

5.2.8 The Joint Article Management Promotion Consortium (JAMP)

The system builds on standardised transmission sheets for information on chemical substances contained in product. The chemical contained in products/articles is reported in standardized Article Information Sheets (AIS) for the information transfers further down the supply chains. The system offers a way to systematically list all substances of a substance, a mixture or an article, including name, CAS-number and concentration. If a substance (and its concentration) falls under a certain requirement (e.g. RoHS or SVHC), this is automatically displayed in the sheet.

Communication tool	*Joint Article Management Promotion Consortium (JAMP)*
Type of communication instrument	List of substances Standardised data entry and transmission template
Institution	JAMP is a consortium of 357 companies of various industries, including chemical and electronics industry. The majority of members are Japanese companies (information from 09/2009).
Industry / product group	Chemical industry, electronics industry, metal industries and others
Complexity of product group	The tool can be used for single substances as well as for complex mixtures and complex articles.
Area	Global application
Design control	No design control required.....
Basis	SVHC, the PBT list in ESIS, JIG and GADSL
Target group 1 (provider of information)	Supplying companies from various industries, including chemical industry, electronics industry and others.
Target group 2 (recipient of information)	Manufacturers from various industries.
Access & Transparency	Guidelines and information transmission sheets freely available after registration. Information on substances can only be accessed by parties that are granted access by the relevant supplier/producer.
Costs of use	Guidelines and forms can be downloaded and used free of charge. The use of the common web-based platform for data sharing and exchange (JAMP-IT) is based on payment and membership.
Substance coverage	The system offers a way to systematically list all substances of a substance, a mixture or an article, including name, CAS-number and concentration. Homogeneous materials as well as complex articles

Communication tool	*Joint Article Management Promotion Consortium (JAMP)*
	can be described. Warnings are displayed when a certain substance and concentration falls under one of the following regulations: Japanese Chemical Substance Control Law, Japanese Industrial Safety and Health Act, Japanese Poisonous and Deleterious Substance Control Law, RoHS Directive, ELV Directive, CLP (Annex VI Table 3.2 CMT-cat. 1,2), REACH (Annex XVII), REACH SVHC.
Data format	Digital data sheets
Applicability for REACH	Yes
Applicability for other industries	The system is designed to be applied in all types of manufacturing industries.
Web link	http://www.jamp-info.com/english

5.2.9 Environmental Product Declarations (EPDs)

Environmental Product Declarations (EPDs) aim to provide relevant, verified and comparable information about the environment impacts from goods and services. EPDs are available for all types of products and services and give quantitative information derived from life cycle assessments and other product specific assessments.

Communication tool	*Environmental Product Declarations (EPDs)*
Type of communication instrument	Format to display verified data on product specific environmental characteristics and impacts. Some EPDs are supplemented with information on hazardous substances.
Institution	
Industry / product group	All products and industries
Complexity of product group	Depending on the product group
Area	Global application
Design control	No design control required.
Basis	LCA information; ISO 14025
Target group 1 (provider of information)	Producers
Target group 2 (recipient of information)	Mostly corporate and public consumers
Access & Transparency	Some, not all, EPDs can be downloaded free of charge and without prior registration.
Costs of use	Free of charge
Substance coverage	Primary focus on LCA-data. It is up to the decision of the involved parties to include specific information on hazardous substances. There is no standard requirement to display SVHCs in EPDs.
Data format	PDF
Applicability for REACH	Principally yes. Nevertheless, the currently available EPDs are not uniform regarding chemicals in products.
Applicability for other industries	Yes
Web link	http://www.environdec.com/en/

5.2.10 BASTA

BASTA´s aim is to speed up the phasing out of dangerous substances in construction products. It is based on a criteria list, which lays out the requirements building materials must fulfil in order to qualify for the BASTA register. This register is a database where producers of building material can place their products that fulfil the BASTA requirements.

Communication tool	*BASTA*

Communication tool	*BASTA*
Type of communication instrument	List of criteria and database
Institution	IVL Swedish Environmental Research Institute and The Swedish Construction Federation
Industry / product group	Producers of building materials
Complexity of product group	Low
Area	Sweden
Design control	No design control required.
Basis	BASTA's "properties criteria" with a strong link to REACH
Target group 1 (provider of information)	Building material producers
Target group 2 (recipient of information)	Building-industry, architects, contractors, private consumers
Access & Transparency	The database can be accessed free of charge and without prior registration
Costs of use	Free of charge
Substance coverage	High number of substances. All substances classified as, for example, carcinogenic, mutagenic, toxic to reproduction. SVHC are covered.
Data format	
Applicability for REACH	Yes.
Applicability for other industries	No
Web link	http://www.bastaonline.se/english/

5.2.11 RosettaNet

RosettaNet develops universal standards for global supply chains. The "PIP-Standards" (Partner Interface Process) aim to provide frameworks that allow individual companies to enhance the interoperability of business processes across global supply chains.

Although standards are openly available, the relevant standards for material composition of products (e.g. 2A9, 2A10, 2A13, 2A15) are not yet finalised and therefore to date not available (as of August 2011). Therefore, the analysis was dependent on general information.

Communication tool	*RosettaNet*
Type of communication instrument	Various standard documents that aim to facilitate interoperability of business processes across global supply chains.
Institution	RosettaNet (consortium of single companies – most multinationals)
Industry / product group	Open to all industries. In fact, strong focus on electronics industry.
Complexity of product group	Depending on product group
Area	Global (strong focus on the USA)
Design control	It can be used in different industrial sectors, even without strict requirements on content and format of communication.
Basis	Unknown (relevant standards are not yet available)
Target group 1 (provider of information)	Companies in supply-chain
Target group 2 (recipient of information)	Companies in supply-chain
Access & Transparency	PIP-Standards are in principle openly available. All standards on substances in products are still under development and cannot be accessed yet.

Communication tool	*RosettaNet*
Costs of use	Free of charge.
Substance coverage	No information are available, which substances are included
Data format	PDF
Applicability for REACH	unknown
Applicability for other industries	yes
Web link	http://www.rosettanet.org/Standards/RosettaNetStandards/tabid/473/Default.aspx

5.2.12 Global Data Synchronisation Network (GDSN)

The Global Data Synchronisation Network is an automated and internet based network of databases and a global registry. The system allows companies to display product information (of finished products) in a standardised way. As soon as a certain type of product information is updated by the producer, it is automatically updated in all databases connected to the system. GDSN is mainly aimed to facilitate the exchange of common (non-sensitive) product related information like function, size, packaging, weight and price.

Communication tool	*Global Data Synchronisation Network (GDSN)*
Type of communication instrument	Standardised data format and database
Institution	Global Standards One (GS1)
Industry / product group	All types of finished products
Complexity of product group	Depending on product group
Area	Global
Design control	It is difficult to assess on general information whether the tool can be used in different sectors without control by a specific actor.
Basis	No specific basis. The system is a framework to exchange various kinds of product related information.
Target group 1 (provider of information)	Manufacturers of finished products
Target group 2 (recipient of information)	Wholesale buyers, traders, corporate consumers
Access & Transparency	Data can be viewed by all system-participants
Costs of use	unknown
Substance coverage	The system is not exclusively focused on substances but offers a framework to provide various types of product related information (e.g. name, function, size, packaging, weigt…). As the data can be viewed by multiple players, sensitive information (such as information on substance composition) might not be integrated in many cases. In theory, SVHC can be reported. At present are no examples available.
Data format	XML
Applicability for REACH	Theoretically yes. In reality integration of REACH-Information might be hampered by the fact that the system is aimed to communicate general and non-sensitive product information only.
Applicability for other industries	All finished products
Web link	http://www.gs1.org/gdsn

5.3 Conclusions from analysis of existing instruments

The analysis in chapter 5.1 revealed that there is already a broad variety of instruments that in one way or the other facilitate the communication of product specific information between various stakeholders.

In most cases, one of the following three types of instruments can be found:

- a list of restricted substances,
- a reporting format or
- a database –

or a combination of these elements.

In some cases, the content of the inter-chain communication is detailed information on specific substances and their concentrations in a specific material, in a component or in a complex article. Reference point for this information can be a list of restricted substances (in defined or variable formats).

In other cases no information is given on the concentration of specific substances. Only a Yes/No – information is given, with reference to substances lists. These substance lists contain substance specific concentration limits. “No” means: the article does not contain a substance from a list in a concentration above the concentration limit set in the list.

There is a clear concentration of elaborated tools in the automotive sector and in the sector of electric and electronic articles.

As soon as the producers are selling products for the private market, labels get an increasing importance for communication. In the textile sector and in the construction sector, lists of undesired substances are common since more than two decades. Often these lists go beyond the existing chemicals legislation. They include substances which are not subject to legal restrictions. Sectors decide to replace these substances on a voluntary base.

However, in the majority of sectors similar instruments are not available yet. Companies are using individually designed information tools, if they are involved in the communication on SVHC already.

From the 45 instruments which have been analysed, a large part is designed in a way that integration of REACH-specific information will either be difficult or will not lead to the intended result of providing a universal and global information system for supply-chains. This can be illustrated by the following cases:

- Product Labels: Voluntary labelling schemes (such as EPEAT or ÖKO-Tex) mostly have substance specific criteria. Nevertheless, the schemes only require a manufacturer to stay below certain threshold concentrations. They do not require to display the absolute concentrations of substances. Therefore, these systems only provide the very general information that the labelled products are in line with the respective criteria.
- Limited scope and geographical coverage: Many systems analysed in chapter 5.1 are tailored to a very specific scope or a limited geographical coverage. As an example, California’s Proposition 65 is exclusively used in California. Another example is the Interstate Mercury Education and Reduction Clearinghouse (IMERC), which is solely applied in the USA and only focused on one substance (mercury).

A number of instruments provide product-specific information for consumers and the general public, e.g. GoodGuide and SkinDeep. They are based on an integrated assessment of a larger number of aspects related to human health, the environment and social responsibility. They offer an easy-to-understand information for non-experts. Even if they often include a reference to lists of restricted substances, they do not have the

objective to support exchange of information on specific substances within the supply chain. For this purpose the instruments given in table 4 are more appropriate[3].

Nevertheless, the analysis also yielded a variety of instruments which are well suited for the intra-chain exchange of information on hazardous substances. They have been analysed in more detail in chapter 5.2. Here, the following instruments are particularly interesting for the purpose of establishing a global and universal information system on chemicals:

Table 4: Instruments of high interest for communication on substances in articles

	Name	*Industry*
1	Global Automotive Declarable Substance List (GADSL)	Automotive industry
2	International Material Data System (IMDS)	Automotive industry
3	The JAMA/JAPIA Standard Material Datasheet	Automotive industry
4	Joint Industry Guide for Material Composition for Electronics Products (JIG)	Electronics industry
5	IPC 175x Standards	Electronics industry
6	BOMcheck	Electronics industry
7	Umbrella Specs	Electronics industry
8	Joint Article Management Promotion Consortium (JAMP)	All industries

[3] A supplement contains additional information about multi criteria assessment-tools for consumer (GoodGuide, Healthy Stuff, SkinDeep, Household Products Database), the RSL + Toolkit American Footwear, the US EPA DfE and RAPEX.

The other instruments analysed in Chapter 5.2 proved less applicable for the following reasons:

- Entry format not standardised to display substance data in a uniform way (EPDs);
- No information on concentration levels (e.g. BASTA[4]);
- Limited to general (non-sensitive) product information such as price, size and weight (GDSN);
- Still under development (RosettaNet).

The analysis of the eight intra-supply-chain communication tools listed in table 4 revealed that these systems are all built upon one or more of the following modules:

Module 1: A list or guidance document specifying the substances to be addressed by the communication tool

These lists usually display all substances that shall be reported within the communication process. The lists are mostly based on substances covered by legislation in Europe or other world regions such as Directive 2000/53/EC (End-Of-Life Vehicle Directive), Directive 2002/95/EC (RoHS-Directive), Directive 2006/66/EC (Battery Directive), Regulation (EC) 1907/2006 (REACH-Regulation) or the Japanese Chemical Substance Control Law. In addition, some approaches tailor the lists to the need of the targeted sector by integrating only such substances that are typically used in the supply chain's articles. Besides listing substance names and CAS-numbers, these lists typically also provide information about the relevant regulative documents and threshold concentrations.

gadsl
global automotive declarable substance list

	Substance	CAS-No.	Classi-fication	Reason code	Application	Source (Legal requirements regulations)	Generic examples	Threshold (0,1% if not stated otherwise)
1	Acetaldehyde	75-07-0	D	FI		Reg. (EC) No 1272/2008	Emitted substance from polymer components	
2	Acetamide	60-35-5	D	FI		Reg. (EC) No 1272/2008	Solvent additive, stabilizer for softening agents	
3	Acetamide, N-Methyl-	79-16-3	D	FI		Reg. (EC) No 1272/2008, Classified as toxic to reproduction class 2	Present in capacitors, used in automobile parts	
4	Acetonitrile	75-05-8	D	FI		Reg. (EC) No 1272/2008	Component in high-capacity capacitors	
5	Acrylamide	79-06-1	D	FI		Reg. (EC) No 1272/2008	Production of polyacrylamide (residual monomer)	
6	Acrylonitrile	107-13-1	D	FI		Reg. (EC) No 1272/2008	Production of plastics, resins and rubbers e.g. ABS (residual monomer)	
7	Amines, carcinogenic, which are formed from Azo-dyes, selected		P	LR		Reg. (EC) No 552/2009	In dyes for textiles etc.	30 ppm

Figure 1: Extract from the Global Automotive Declarable Substance List (GADSL)

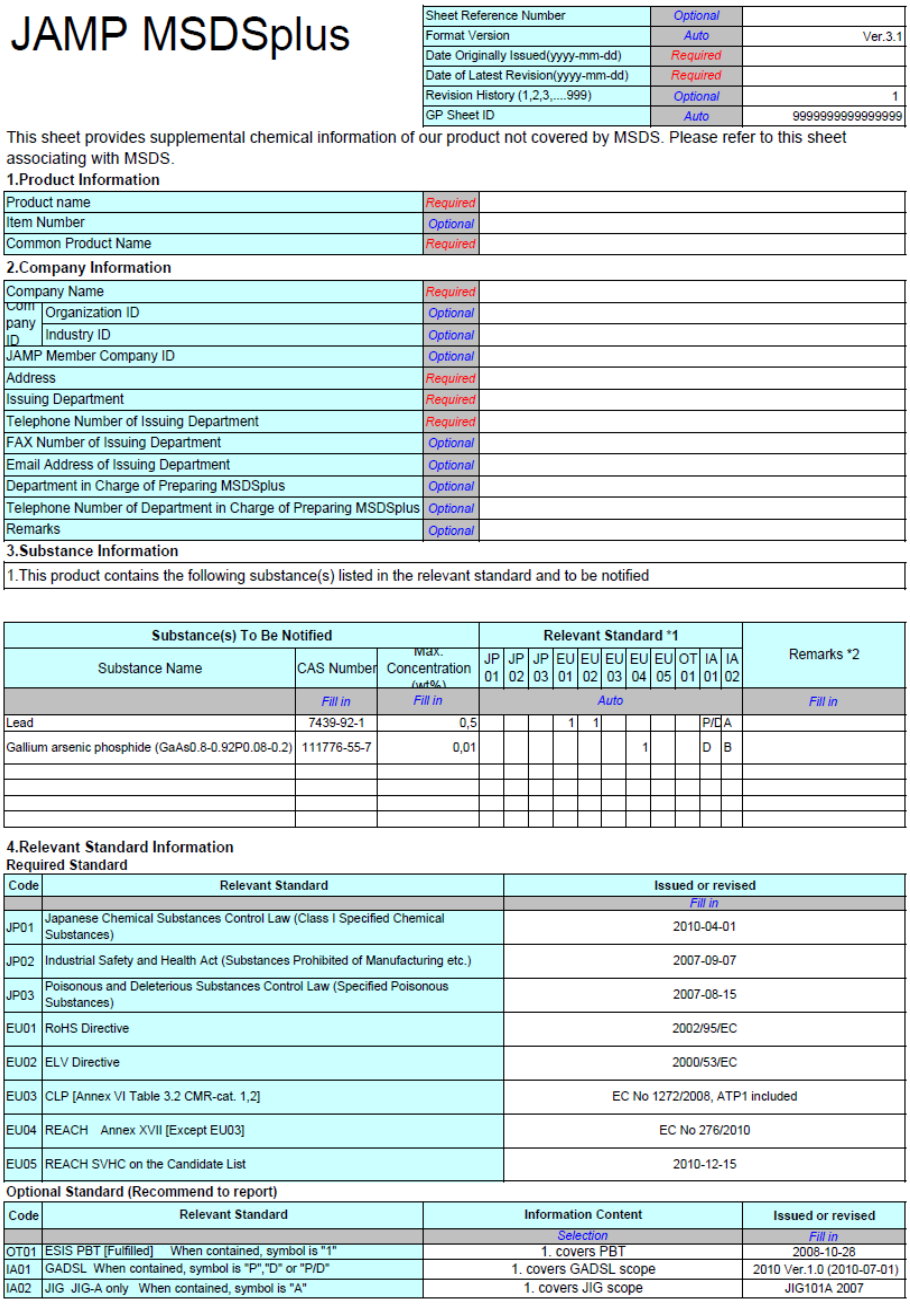
There are three communication approaches that significantly differ in terms of substance coverage: While most systems focus on regulated substances and substances prone to future regulation, IMDS, the JAMA/JAPIA Standard Material Datasheet and Umbrella Specs provide systems to display the total material composition of articles. Therefore, these approaches are not dependent on a substance list[5].

[4] Similar to voluntary labelling schemes, a listing in the BASTA-database just means that a certain product fulfils certain criteria.

[5] Despite that, IMDS and the JAMA/JAPIA-system maintain substance list covering several thousands of substances. These lists are aimed to facilitate data entry and to insure a common definition of individual substances.

Module 2: A standardised data entry and transmission template

Standardised data entry templates are a core element of intra-supply-chain communication tools. They are usually based on some type of digital entry format (e.g. excel) that insures a complete and coherent data entry. Usually, these sheets are linked to a substance list (see Module 1) and can complete some substance information automatically (e.g. substance name is displayed automatically after CAS-number is typed in). In addition, these tools usually make a reference to the relevant legislation for each substance and concentration. Depending on design and regional coverage, the data entry templates can comprise different language settings and user information. In addition, the templates also request background information on the company (e.g. name, location, contact details) and name and type of article. Figure 2 provides an example of such a standardised data entry template. Usually, these data entry templates enable the generation of XML-files to be used for the transmission of the data.



JAMP MSDSplus

Sheet Reference Number	Optional	
Format Version	Auto	Ver.3.1
Date Originally Issued(yyyy-mm-dd)	Required	
Date of Latest Revision(yyyy-mm-dd)	Required	
Revision History (1,2,3,....999)	Optional	1
GP Sheet ID	Auto	9999999999999999

This sheet provides supplemental chemical information of our product not covered by MSDS. Please refer to this sheet associating with MSDS.

1.Product Information

Product name	Required	
Item Number	Optional	
Common Product Name	Required	

2.Company Information

Company Name	Required	
Company ID	Organization ID	Optional
	Industry ID	Optional
JAMP Member Company ID	Optional	
Address	Required	
Issuing Department	Required	
Telephone Number of Issuing Department	Required	
FAX Number of Issuing Department	Optional	
Email Address of Issuing Department	Optional	
Department in Charge of Preparing MSDSplus	Optional	
Telephone Number of Department in Charge of Preparing MSDSplus	Optional	
Remarks	Optional	

3.Substance Information

1.This product contains the following substance(s) listed in the relevant standard and to be notified

Substance(s) To Be Notified			Relevant Standard *1										Remarks *2
Substance Name	CAS Number	Max. Concentration (wt%)	JP 01	JP 02	JP 03	EU 01	EU 02	EU 03	EU 04	EU 05	OT 01	IA 01	IA 02	
	Fill in	Fill in	Auto											Fill in
Lead	7439-92-1	0,5				1	1					P/D	A	
Gallium arsenic phosphide (GaAs0.8-0.92P0.08-0.2)	111776-55-7	0,01							1			D	B	

4.Relevant Standard Information

Required Standard

Code	Relevant Standard	Issued or revised
		Fill in
JP01	Japanese Chemical Substances Control Law (Class I Specified Chemical Substances)	2010-04-01
JP02	Industrial Safety and Health Act (Substances Prohibited of Manufacturing etc.)	2007-09-07
JP03	Poisonous and Deleterious Substances Control Law (Specified Poisonous Substances)	2007-08-15
EU01	RoHS Directive	2002/95/EC
EU02	ELV Directive	2000/53/EC
EU03	CLP [Annex VI Table 3.2 CMR-cat. 1,2]	EC No 1272/2008, ATP1 included
EU04	REACH Annex XVII [Except EU03]	EC No 276/2010
EU05	REACH SVHC on the Candidate List	2010-12-15

Optional Standard (Recommend to report)

Code	Relevant Standard	Information Content	Issued or revised
		Selection	Fill in
OT01	ESIS PBT [Fulfilled] When contained, symbol is "1"	1. covers PBT	2008-10-28
IA01	GADSL When contained, symbol is "P","D" or "P/D"	1. covers GADSL scope	2010 Ver.1.0 (2010-07-01)
IA02	JIG JIG-A only When contained, symbol is "A"	1. covers JIG scope	JIG101A 2007

Figure 2: Extract of the data entry sheet MSDSplus of the Joint Article Management Promotion Consortium (JAMP)

Module 3: An online database facilitating the exchange of information between suppliers and customers within a supply-chain

In order to facilitate the exchange of information collected with a standardised data entry template (see Module 2), some systems offer a web-based database that allows the digital transfer of data in a common format. Basically, these systems are designed to yield the following advantages:

- Suppliers do not have to send out data sheets to all their customers individually. With an online database, they can upload their data and grant access to all relevant customers.
- In turn, customers can use the system to request article specific information from their suppliers in a standardised way.
- The substance data is collected in a common format, which can be used by manufacturers to feed their own databases. This allows an easy compilation and tracking of the substances contained in an assembled product composed of various articles.

Conclusions from the module construction

While some of the analysed instruments listed in table 5 comprise modules for all three modules, some focus on one or two modules while making use of complementary modules of other instruments.

Table 5: Classification of supply-chain communication instruments into three modules

Name of communication tool	*Module 1*	*Module 2*	*Module 3*
	List of substances	*Standardised data entry & transmission template*	*Online database*
Global Automotive Declarable Substance List (GADSL)	yes	no	no
International Material Data System (IMDS)	yes *	yes	yes
JAMA/JAPIA Standard Material Datasheet	yes	yes	no
Joint Industry Guide for Material Composition for Electronics Products (JIG)	yes	no	no
IPC 175x Standards	no **	partly ****	partly ****
BOMcheck	partly ***	yes	yes
Umbrella Specs	no	yes	no
Joint Article Management Promotion Consortium (JAMP)	yes	yes	no

* With reference to GADSL; ** Reference to JIG; *** closely related to JIG;
**** IPC 175x Standards specify the data structure and formats to be used for intra-supply-chain communication. Therefore, IPC 175x Standards form the basis for many company specific data entry tools and databases.

In addition to this module-type structure of supply-chain communication systems, it is striking that seven out of eight systems identified in table 4 are routed in either the automotive or the electronics industry. This situation can be explained by the fact that both industries were intensively affected by product related legislation regarding the use of substances or the improvement of recycling efficiencies (e.g. ELV-Directive, RoHS-Directive) already before REACH came into force. In addition, both sectors produce highly complex products with several thousands of parts per product and various supplier levels. In this situation, standardised supply-chain communication tools are almost indispensable in order to fulfil all legal requirements.

Nevertheless, there are also striking differences in the combination and structure of supply-chain communication tools of both industries:

The supply-chain related communication tools of the automotive industry are basically designed to provide solutions for two legal demands: (1) to inform on, or to limit the use of certain substances; (2) to increase post-consumer recycling efficiency. This has led to tools that enable the communication of total material compositions as well as concentrations of critical substances. In contrast, the communication tools of the electronics industry are mostly focused on the first demand only[6], which led mostly to communication tools focussing on restricted and declarable substances[7].

Furthermore it is striking that the automotive industry uses the only tool that comprises all modules described above (IMDS). As outlined in Chapter 5.2.2, the system is developed and maintained by HP and widely established throughout the industry. Apart from GADSL - which is a common substance list only - the JAMA/JAPIA is the only alternative to IMDS and used only by comparable few, mostly Asian actors. This situation can be explained by the dominance of a comparable small number of car manufacturers that can implement one common solution in the whole industry. In contrast, the electronics industry has a much broader variety of leaders and the OEMs are not always the most influential players in the supply-chain[8]. Therefore, the used communication tools are more built upon a module 1 type substance list (JIG) and common standards on what kind of information should be communicated in what data format. Here, the IPC 175x Standards play a particular important role. The impact of the RosettaNet Standards cannot be appraised yet. The implementation of these standards into software solutions and databases is left to the software market. This resulted in the creation of various competing software tools like BOMcheck (c.f. Table 6).

Table 6: Overview of existing software implementation tools for the IPC 1752 Standard of the electronics industry

Name of company or software tool	*Web link*
National Institute of Standards and Technology (NIST)	http://sourceforge.net/projects/ipc175xutils/
BOMcheck	www.BOMcheck.net
Dassault Systems Material Compliance Central PLM Brand	www.enovia.com
GreenSoft Technology	http://www.greensofttech.com/software.html
Papros, Inc	http://www.papros.com/mrpro.htm
1752 Builder	http://www.1752builder.com
Suppliersoft	www.suppliersoft.com?q=Environmental-Compliance
Total Parts Plus	http://www.totalpartsplus.com/newsCenter.aspx?id=97

[6] Although the electronics industry is also facing quantitative indicators for recycling efficiency (e.g. WEEE-Directive), the material recovery requirements are less ambitious than in the ELV-Directive and can be achieved without complex declaration of the total material composition. The ELV-Directive in particular requires a material utilisation rate of 95% from 1st of January 2015 on.

[7] Despite that, BOMcheck has the optional functionality of providing total material compositions. In addition, the Umbrella Specifications also foresee a comprehensive listing of all materials. These exemptions can partly be explained by the fact that parts of the electronics industry also function as supplier to the automotive industry.

[8] Producers of microchips (e.g. Intel, AMD) have a significant influence on product design and have a significant impact on the supply-chain structure.

Therefore, the approach by the electronics industry is not tied to any specific software solution as in the automotive industry. This also resulted into a market-based competition on the most convenient and cost-efficient software implementation. Thereby, the Joint Industry Guide for Electronics Products (JIG) together with the IPC 175x Standards insure that all companies communicate the same information in a uniform structure and file-format so that they all datasets can be managed by all software solutions listed in Table 6 .

6 Communication requirements

6.1 Direct communication requirements according to REACH Article 33

The type of information to be communicated on SVHC on the candidate list (in the following: candidate substances[9]) in articles supplied to commercial actors and/or consumers is defined in REACH Article 33:

> *"1. Any supplier of an article […] shall provide […] sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance."*

Consequently, the **name of a candidate substance** must always be communicated.

In addition, **sufficient information to allow safe use**[10] of the article shall be provided. The term "sufficient information to allow safe use" is not further specified or explained in the legal text (c.f. 6.3).

The term "**available to the supplier**" is also not further specified and should be interpreted in analogy to other parts of REACH with similar wording. It refers to information the article supplier

- has received from his own supplier,
- has available in-house due to his own processes and activities or
- should be aware of because it is general sector knowledge[11].

However, if the article supplier is aware that specific handling of an article is necessary to ensure safe use, he must actively search for respective information to communicate downstream according to the Guidance on Substances in Articles (SiA guidance)[12]. Consequently, the term „sufficient information to allow safe use, available to the supplier" must be interpreted with regard to the recipient of the article and the risk it poses (c.f. Section 6.3).

REACH actually poses the obligation to assess the safe use of articles and the communication of related information on safe use to the manufacturer / importer of substances. In an optimal case, the information that should be communicated with articles would therefore be available in SDS/ES. However, due to the generic nature of the exposure assessment, it is likely that the M/I's assessments do not derive that information. Also the SiA guidance considers that the article producer has to check potential exposures and risks (c.f. p. 19).

---

[9] The term "candidate substances" will be used in the following in order to distinguish these substances from SHVCs which are not listed on the candidate list but may have been identified as having these properties by the suppliers or which are only intended to be placed on the candidate list (registry of intentions) or to distinguish them from substances of very high concern identified in other contexts, such as the priority (hazardous) substances of the Water Framework Directive.

[10] The term "safe use" generally applies to substances and mixtures and NOT to articles (c.f. definitions in REACH Article 3). However, in the context of Article 33 and according to the SiA guidance, the term "safe use of an article" should be understood as "adequate control of risks" under normal and reasonably foreseeable conditions.

[11] The information sources quoted in the annexes of the Guidance on Requirements for Substances in Articles (SiA guidance) only refer to the content of SVHC in articles but not to the safe handling and use of articles.

[12] http://echa.europa.eu/documents/10162/13632/articles_en.pdf

6.2 Indirect communication requirements according to REACH Article 7(2)

In order to enable actors down the supply chain which use articles containing candidate substances to check if they have to submit a notification to the Agency, the supply chain communication needs to extend beyond the direct legally required information from Article 33.

Article 7(2) states:

> *"Any producer or importer of articles shall notify the Agency […] if both the following conditions are met:*
>
> *a) the substance is present in those articles in quantities totalling over one tonne per producer or importer per year;*
>
> *b) the substance is present in those articles above a concentration of 0,1 % weight by weight (w/w)."*

Indent a) requires that the article producer or importer calculates the total amount of each individual candidate substance in all the articles he supplies per year[13]. Hence, for each article the article producer / importer has to know either the total amount of each individual candidate substance per article or their concentration(s), the total weight of the article and the total number of the respective articles he places on the market per year.

The submission of the notification only requires information that the article producer / importer have available in-house, except the registration number of the candidate substance. However, the registration number only has to be provided "if available" and can therefore be regarded as "voluntary requirement"[14].

6.3 Interpretation of "information on safe use"

In the ECHA SiA guidance it is explained that:

- the type of information that is obligatory to forward depends on what the users (commercial actors and consumers) need to know to ensure that risks are adequately controlled;
- safe use is to be ensured along the entire downstream chain, including transport and the waste stage;
- all potential exposures and necessary risk management measures (RMMs) for safe use need to be considered;
- the information type may vary for different user groups or uses of the article;
- if information to ensure safe use is needed, it is to be provided, even if it is not readily available to the article supplier[15].

Consequently, to determine which information must be provided, the article producer / importer should reflect the potential risks for professional users, consumers and the environment from the further processing of the article, the article service life and the waste stage as well as consider if and which risk management measurers should be communicated. In addition, the article producer may voluntarily provide information on

[13] This information would also be necessary to identify if a substance intended to be released from an article must be registered (REACH Article 7(1)), because the total amount of the CS in the article is to be determined for checking the tonnage threshold.

[14] In case of an article importer the registration number will almost never be available as the substances present in the imported article imported will normally not have been registered.

[15] This means that if the supplier is aware that specific handling may be necessary without him having the respective information available, he should start an active information search or determine what measures are needed.

the safe use, if the reflection of risks results in the decision that a safe use of the article is possible without that information.

The format for providing the information is not specified in REACH or in the SiA guidance. The guidance stresses that the information should be "readily available" to the users.

6.4 Current practice in communication according to Article 33

The analysis of existing tools for supply chain communication on hazardous substances in articles shows that at present a broad variety of instruments exist to support the communication of product specific information between various stakeholders.

Due to legal requirements, the automotive sector and the sector of electric and electronic articles have a long history in reporting on hazardous substances. Therefore, the content of the inter-chain communication in these sectors is detailed and reflects information at the level of specific substances and their concentrations in a specific material, in a component or in a complex article. Lists of restricted substances are the reference point for this information. The lists described in Work Package 1 include CS.

However, the existence of sophisticated tools as the IMDS or BOMCheck in specific sectors cannot be considered as current practice of supply chain communication in general. As already stated in the Work Package 1 report, in the majority of sectors no similar instruments or no instruments at all are available, yet. Companies use individually designed information tools - if they are involved in the communication on SVHC at all.

In the collection of feedback and experience on the comprehensive data set for communication on hazardous substances in articles, stakeholders have been asked regarding the extension of Art. 33 communication beyond the mere legal requirements. The stakeholders reported that in many cases information on CS in articles is missing. In other cases, only a Yes/No-information is given (with "No" meaning: the article does not contain a substance from the current REACH candidate list). Only in rare cases information is given on the concentration of specific substances in a specific part of a complex article. The European discussion whether the threshold of 0.1 % refers to the whole article or to parts of complex articles is a further obstacle for an effective communication on CS in articles. Additional information on operational conditions and risk management measures at workplaces, on exposures during service life or on appropriate handling for disposal is not included in the current practice of Art. 33 communication.

6.5 Information needed to take producer responsibility

To fulfil his role and take his producer responsibility it is essential for the placer on the market of an article that he has all the information he needs to assess whether or not his specific article may or may not pose a risk to the users. Due to the limitation of the information chain on hazardous substances in articles to communicating on candidate substances only, this information is frequently either missing or incomplete[16]. In this regard an effective and detailed communication on the content of hazardous substances in specific articles (e.g. used as parts) as well as on the conditions of safe use would provide important support to the placers on the market of articles. If the producer responsibility is taken seriously, an assessment of safety of the specific article is needed and this requires detailed base data rather than aggregated information on conditions of use and risk management measures.

[16] Except for article producers that incorporate a substance into an article and therefore receive safety data sheet information.

To fulfil the producer responsibility, checking of risks and communication on substances is not limited to candidate substances. SVHC and other hazardous substances could be included in communication. For the article producers / importers, no requirements according to Art. 33 would be triggered but knowledge on content and possible exposures would support the producer responsibility as well as safe handling of articles during their further processing or assembling (support to fulfil employers' obligations for next market actor down the chain).

Other legislation, such as the Water Framework Directive[17], the Industrial Emissions Directive[18], the RoHS Directive[19] or national legislation on workers protection, list substances of high priority in the context of their regulatory scope. Also international conventions, such as OSPAR or HELCOM, may include lists of substances of high concern. Except the RoHS Directive neither one of these triggers legal communication requirements for articles under REACH, unless they are placed also on the candidate list for authorization.

The communication concept is therefore expandable to hazardous substances in general in order to enable the adaptation of its coverage to sector specific substance priorities (like e.g. restricted substance lists).

6.6 Requirements on the practicality of the communication instruments

6.6.1 Updating and expansion of the coverage of substances

The candidate list will be updated at least twice a year and new SVHC will be identified and added. Sectors may have specific priorities and some actors or supply chains may want to include other substances of concern in their communication on articles.

Hence, the communication tool to be designed in this project should not be limited to current CS (and other substances of high concern) but should be flexible in coverage and enable easy inclusion / expansion as well as removal of substances[20].

6.6.2 Compatibility with existing sector tools

As presented, a limited set of tools on communication on hazardous substances in articles are already used. Most of them are sector specific with regard to the structure and information content as well as to the information providers and users. Some have been used and improved over time and are hence well-established and accepted. However, the huge majority of sectors do not have any established standards or tools and lack experience on the issues.

The communication tool should not attempt to replace existing tools. Instead, it should:

- In supply chains where well established tools exist: be integrated or feed into these;
- In supply chains where approaches exist but are used only in part or only by few actors: either allow strengthening of existing tools or provide the conceptual basis for alternative instruments, which could include the existing functions;

[17] DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy

[18] DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast)

[19] DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

[20] At present there is no procedure to remove SVHC from the list. In case such procedures would be implemented, e.g. in the revision of REACH, the "deletion" of then "former candidate substances" should also be possible for the communication tool.

- In supply chains where no tools or approaches are available: create the basis for a new communication instrument.

Consequently, reporting on hazardous substances in articles may be designed in two parts:

a) definition of distinct information items / data fields which are compatible to the interfaces or data exchange formats of existing tools and

b) guidance and formats forming a self-standing tool together with the defined information items.

6.6.3 Forwarding and integrating information in the supply chain and in companies

Manufacturers / importers (M/I) of substances communicate information on candidate substances (CS) down the supply chain and formulators (F) use it for their (extended) safety data sheets (SDS)[21]. Hence, article producers (AP) (not importers!) receive information on candidate substances they incorporate as such or in mixtures into their articles in form of a safety data sheet. Information on safe use during the article service life and the waste stage may be included[22] in the SDS and/or the annexed exposure scenario (ES).

Article producers assembling articles from other articles containing candidate substances receive as a minimum the name of the substance as well as information necessary to ensure safe use.

Article producers (or importers) may pose requests on the content and information on safe use up the supply chain, e.g. to clarify the exact amounts or to understand information he received.

All actors in the supply chain may have internal material management and communication software for their raw materials and the products they provide. Consequently, any "new" communication tool to be designed should provide electronic interfaces compatible with the existing information instruments in the supply chain, i.e. SDS, ES, Art. 32 information as well as with internal material or environmental, health and safety management systems. This could be ensured by separating the information to be communicated (data fields) from the manner of transportation (formats). Data import and export, e.g. as standard excel file, would help data analysis and creating internal overviews as well as potential priority setting.

6.6.4 Requirements on the relevance and understandability

Information on safe use and safe disposal of an article may be of varying complexity along the supply chain. Each of the actors / roles should consider which information is best to be forwarded and how (mode of communication) in order to enable his customer to use it for his information provision[23]. Hence, each actor is to consider the relevance of information he receives for his customers. In addition, each actor should consider the knowledge of the customers in order to provide understandable information that is practical and directly implementable.

[21] If the CS is contained in the mixtures below the concentration limit for consideration, it is not listed in the SDS anymore and will not be communicated further downstream.

[22] It should be noted that in practice this information is rather theoretical and fairly generic due to the nature of the chemical safety report being generated by the manufactures and importers with low knowledge on the actual end-use of a substances.

[23] A formulator may provide information on how to include a substance into an article matrix so it does not easily migrate or evaporate from it. This information is important for the article producer to manage his production but is not relevant to the user of the article, as he has no influence on the inclusion of the CS. However, he may have to consider specific disposal recommendations to ensure no release occurs to the environment.

These considerations are not easily implemented in standardized/harmonized communication tools but could be part of related guidance. This guidance should be role-specific and address the different knowledge, information access and types of customers / recipients of articles to be useful in communication on hazardous substances. Respective considerations are presented in Section 7.

6.7 Conclusions on specifications of the communication tool

With view to the existence of sector specific communication tools, it is recommended to develop a communication concept on substances in articles separating the information content (data structure) from the mode of communication (IT-tools, SDS or other means). This ensures that information can be exchanged and are compatible with existing tools (interfaces). Where no tools exist, the concept can be used to build up one. This approach is supported by some of the stakeholder interviews carried out in Work Package 3.

Consequently, the data fields to be exchanged need to be defined. They should be organized hierarchically and clearly indicate the legally required information. The guidance should explain the benefits of communicating additional data fields. This approach enables the different sectors to include as much information as is feasible and helpful when adapting or integrating the concept to their own instruments.

Finally, the data exchange could be tailored or qualified with regard to the type of information each actor needs to receive and which type of information each actor needs to forward. This will have to be explained in actor specific guidance.

7 Communication concept

The communication concept outlined in the following consists of three core elements:

- a description of the actors in the article supply chain,
- a summary of their general information needs and
- a specification of the information they need in order to fulfil their REACH obligations, support compliance with other legislation (worker protection, environment) and be able to take their producer responsibility.

The following explanation focuses on the requirements and communication of candidate substances (CS) to avoid complexity and focus illustrations and tables. However, this can easily be extended to voluntary communication on SVHC or HS, as the principles are the same.

7.1 Actors in the article supply chain

The considerations on the communication tool are developed with view to the actors inside the EU but also apply to importers of articles. Importers of articles are not specifically addressed but are understood as covered under the obligations and communication needs of the article producers, depending on whether they import articles as raw materials for own processing or for distribution (AP-IA or AP-FA). Importers may face additional challenges because they do not receive comparable information to that of producers of first-time articles and have less possibility to request it.

The communication requirements on substances in articles directly apply to the article supplier. In the following, three types of article producers are distinguished:

- AP-FTA → Article Producers of First-Time Articles. They use substances or chemical mixtures and other raw materials such as wood. They may or may not use SVHC as such or in mixtures. AP-FTA either supplies articles (as parts[24]) to AP-IA or to AP-FA.
- AP-IA → Article Producers of Interim Articles. They use articles as input materials (FTA/IA). In addition, they may use chemicals (substances and/or mixtures) which may also contain SVHCs[25] and other raw materials, such as wood. "Interim" Articles (IA) are not placed on the market as such for an end use (i.e. they cannot be directly used by a consumer) but are always intended to be used for the production of a final article and may undergo either further processing or assembling activities. AP-IA may supply further AP-IA or AP-FA.
- AP-FA → Article Producers of Final Articles. They use articles as input (FTA and/or IA). They may also use substances and mixtures and other raw materials. AP-FA produce final articles which can be directly applied by consumers. He may or may not use SVHC as such, in mixtures or in articles. AP-FA supplies consumers or companies.

All article producers place products on the market and hence they should take their producer responsibility.

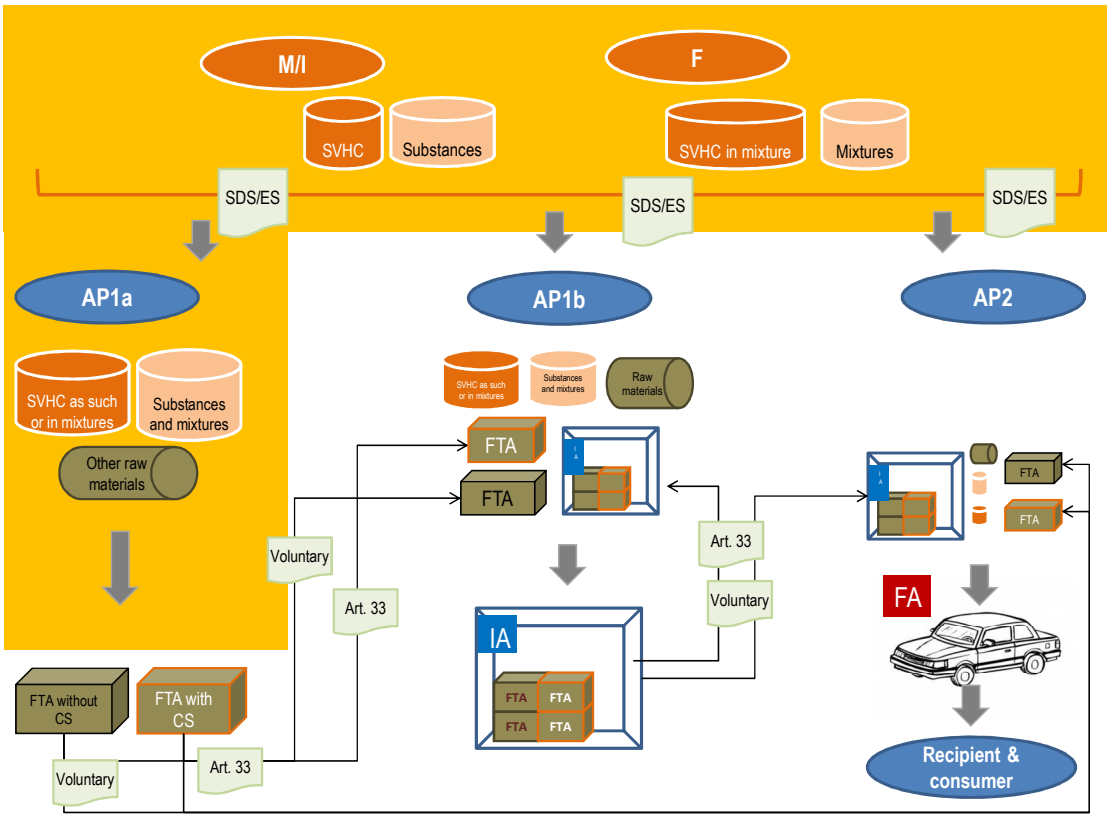


Figure 3: Illustration of types of article producers

[24] In the context of this study it is important to distinguish among the legal term of the chemicals regulation the article, and the terms used in the production and trade discussion like parts, spare parts, components and so on.

[25] According to the current understanding of the "once-always approach" of the dissenting Member States, the inclusion of a candidate substance / an SVHC as such or contained in a mixture to a first-time article or an interim article results in the need to recalculate the concentration of the substance in the article. This situation is to be distinguished from cases, where CS/SVHC are included from two articles that are merged into one; here, no recalculation is allowed.

Communication on SVHC in articles already starts by the M/I of the substance forwarding exposure scenarios related to the use of the SVHC and potentially its use for inclusion in the article and for the article's service life and waste stage.

Whether or not this information will be provided by the M/I depends on the concentration of the SVHC in the article; as long as it remains above 0.1% it should be considered in safety assessment and respective information to be forwarded[26]. This information is normally rather generic but may be modified, adapted and concretized by the formulators as the substance and information flows down the supply chain. The communication tool takes account of the entire chain.

Formulators may use SVHC and then forward respective information with their safety data sheets and exposure scenarios, if required.

Each actor should receive information, consider what part of this information is relevant for the next actor and in which form he should receive it and then prepare respective information for the customers.

The following table summarises the use of materials and the information flow of the different article producers. In this table, the potential voluntary activities on substances of very high concern (SVHC) which are not on the candidate list and/or other hazardous substances are NOT included.

Table 7: Material input and output and information flow of the different types of article producers

Article producer	**AP-FTA**	**AP-IA**	**AP-FA**
Possible input materials	Substances Mixtures	Substances Mixtures Articles (FTA / IA)	Substances Mixtures Articles (FTA / IA)
Possible products	First-time article (FTA)	Interim article (IA)	Final article (FA)
SDS for classified substances/mixtures	Yes, if CS/SVHC/HS is used as such or in mixtures	Yes, if CS/SVHC/HS is used as such or in mixtures	Yes, if CS/SVHC/HS is used as such or in mixtures
Information received with article	No article used	Yes: required if CS above 0.1% in FTA/IA	Yes: required if CS above 0.1% in FTA/IA
Does AP generate information for the article	Art. 33 information if CS > 0.1% in FTA	Art. 33 if CS is added and resulting conc. > 0.1% in IA	Art. 33 if CS is added and resulting conc. > 0.1% in FA
Does AP forward information on article	Art. 33 information required if CS > 0.1% in FTA	If received from AP-FTA or AP-IA with FTA/IA. If the same CS is added to the FTA/IA, information must be generated. If a different CS is added, two information items must be forwarded.	

7.2 Information needs and reasons why it is needed

The article producers' information needs can be structured as follows:

1) Information to check, whether communication or notification under REACH are required according to Art. 33 and 7(2) of REACH (c.f. Section 6.1 and 6.2); this only regards substances on the candidate list for authorization (CS).
2) Information to fulfil the communication obligation under REACH Art. 33 (name and conditions of use, if needed to ensure no risk occur from use of the article), this only regards substances on the candidate list for authorization (CS).

[26] According to REACH Article 14, the chemical safety assessment must consider substances as long as they are contained in concentrations above the legally defined cut-off limits. For candidate substances this cut-off value is 0.1%.

3) Information which is needed and helpful to fulfil obligations under other legislation, such as workers protection legislation (e.g. assessment of risks at the workplace from processing of articles) or environmental legislation (e.g. assessment of compliance with emission limit values), this regards and hazardous substance but is priority for substances of very high concern (SVHC).

4) Information on safe disposal, this concerns hazardous substances which could cause waste-specific risks, also here SVHC are priority.

5) Information which is needed and helpful to take the extended producer responsibility and, among other, assess whether the article placed on the market is safe. This regards to all substances of which producers want to have information to ensure their products are safe. The types of substances are likely to differ depending on the article types and user groups (e.g. children).

The types of information needed for these five areas are summarized in Table 8.

The assessment can also be focused by considering which information is needed (to avoid a risk) or useful (to implement best practice, understand risks or fulfil employer obligations of risk assessments at workplaces) to the recipients and should hence be generated. This needs to take into account the possibilities of the actors to change the way the article is used or disposed of. Hence, the information needs to concern the conditions of handling of the article, measures to reduce exposures and how to dispose of article wastes. The following general structure for information needs may guide the respective considerations on a specific article. Information needs on substance properties (hazardousness, mobility) are not included here.

Table 8: General needs for information guiding the activities for article producers

	Information needs of article producers
Checking Art. 33 and 7(2)	Name of candidate substance, concentration in article and total amount of candidate substance in (all types of) articles Information if a use is already registered
Communicating under Art. 33	Name of candidate substance, conditions of use and risk management measures if needed to ensure that no risks occur from article processing, service life and waste stage
Information supporting workers protection	Human health hazards, DNELs/DMELs, vapour pressure Article (part) in which hazardous substance is contained, concentration and inclusion in matrix / containment Processes to avoid, such as abrasive, high temperature processing RMMs to reduce emissions and exposures
Information supporting environmental protection	Environmental hazards, PNECs, water solubility, vapour pressure (persistence, LogKow) Article (part) in which hazardous substance is contained, concentration and type of inclusion in matrix / containment Processes to avoid (e.g. abrasive, high temperature, water contact) RMMs to reduce emissions and exposures
Disposal	Name and concentration of substance in specific article (parts / components / final complex product) Conditions in waste treatment that could cause risks (e.g. temperature, abrasive…) Waste code, possible limitations on reuse and recycling of production wastes, disposal options to avoid
Information to support producer responsibility	Substance name, concentration in specific articles (parts of the final product), type of inclusion in matrix / containment Human health and environmental hazards, DNELs/DMELs, PNECS, vapour pressure, water solubility, diffusion / migration rates User groups (children, vulnerable populations) and conditions (temperature, water contact, indoor / outdoor etc.) to avoid recommended RMMs to reduce emissions and exposures

Consumers may need information on how to use, store and dispose an article in order to ensure that no risks occur for them or the environment.

Table 9: Information to ensure safe article use by consumers or to provide additional information

	Information needs of consumers

	Information needs of consumers
Information on safe use	Conditions to avoid (temperature, outdoor / indoor etc.) and excluded user groups (e.g. children)
Information on safe disposal	How to discard the EoL product: (exclusion of general) recycling, specific collection or municipal waste
Information on candidate substance / SVHC	Explanation on what the content of the candidate substance in articles means for them in practice. This could regard explanation of what effects could be caused, why the exposure is regarded as low enough for the article to pose no risks, alternatives and strategies of the producer to substitute the SVHC etc.

8 Comprehensive Data Set for Communication

The general considerations on information requirements (c.f. Section 6) and information needs of the different actors are broken down into specific data fields. Thereby, concrete data items are created to facilitate the full range of communication, including support for taking the producer responsibility. The "data fields" could be used to complement existing instruments as well as to form building blocks for new instruments or non-standardised communication.

The list of data fields represents the "comprehensive data set" from which the information that should be forwarded along the supply chain is selected. If the information is handled in an IT-system / database, some type of information, e.g. the classification of the substance, needs to be entered only once. Assuming that IT-systems (currently) exist only in a few sectors, the tables assume actual forwarding and handing over of information from one actor to the next.

The cells in the tables are filled from the perspective of the information provider who enables the recipient to comply with his requirements or to take his responsibility. In the first table, for each information type it is specified (column "status") if it is directly required (name), indirectly required (information needed in the supply chain to comply with the requirements of Art. 7(2)), conditioned and unstructured (information on conditions of use and RMM, if needed to ensure safe use) or not required but important to support taking responsibility.

All tables take into account that the scope of the communication tool could / should be extended to other substances than only the candidate substances (CS). This is expressed by the use of the term SVHC as synonym for hazardous substances on which communication is regarded necessary. The first table refers to candidate substances only, because the information is directly linked to the requirements for candidate substances. Nevertheless, the data fields would be valid for any additional substance of high concern to be taken up.

8.1 Information related to the substance and the article

Table 10 contains all data fields necessary to identify the SVHC and the mixture or article it is contained in at the different stages of the supply chain. Furthermore, data to identify the concentrations and amounts of the SVHC in mixtures used for article processing or the articles is contained.

Grey-shaded fields indicate that the information is principally available in ECHA's database of registered substances. Yellow-shaded fields are not intended for communication but either enable interfaces to company internal information (unique identifiers) and material management systems (DF03b) or are needed to calculate SVHC concentrations (DF05a and DF05b). The green data fields could be derived from each other.

Table 10: Types of information, status and actor specific data input related to the substance and the article

			Information that should be <u>forwarded</u> by the supply chain actor / entered into the information tool					
#	**Type of information**	**Status**	**M/I[27]**	**F[28]**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
01	Substance name	Directly required	X	Forward	Forward	Forward	Forward	To consumers on request
02a	Registration number	Indirectly required for Art. 7(2)	X	Forward	Forward	Forward	--	Helpful, if APs are to make a notification
02b	EINECS number	Voluntary	X	Forward	Forward	Forward	--	Supports compatibility to existing systems
02c	CAS number	Voluntary	X	Forward	Forward	Forward	--	Supports compatibility to existing systems
03a	Product name	Needed for system / identifier	Name	Name of mixture	Name of FTA with SVHC	Name of IA with SVHC	Name FA with SVHC	Unique name of product is needed. Compatibility with part list systems used in the respective supply chains
03b	Internal product identifier	Internal	--	--	--	--	--	Link to company internal material management system, not to be communicated

[27] M/I = manufacturer / importer of substances

[28] F = Formulator of mixtures using the (candidate) substances

[29] AP-FTA = article producers who produce articles with or without candidate substances/SVHC for the first time ("first time articles" (FTA)). They may supply this article (as parts) to an AP-IA (production of "interim" articles) or AP-FA. They could also be producers of FTAs which are "final" articles (FA) at the same time.

[30] AP-IA = article producers who produce "interim" articles (IA) which may consist of articles containing candidate substances or not (FTAs). He produces articles, which are supplied to article producers who assemble the "[final]" article e.g. sold to consumers.

[31] AP-FA= Producer of simple or complex final articles supplied to workers or consumers. The information in this column is not entered into the IT-system but only provided to the end users of the final articles.

			Information that should be forwarded by the supply chain actor / entered into the information tool					
#	**Type of information**	**Status**	**M/I[27]**	**F[28]**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
04	Intended final article	Needed to identify possible exposures	Use descriptors	Relevant use descriptors from M/I	Use in IA or as FA	Use in FA	Use instructions	Information helpful for communication on intended use in the supply chain
05a	Concentration of SVHC in mixture[32]	Indirectly required for Art. 7(2)	--	Conc. in mixture[33]	--	--	--	The exact concentration should be forwarded, if possible to enable calculation of the concentration and amount in articles
05b	Amount of mixture included in FTA/IA	Directly required for Art. 33; indirectly for Art. 7(2)	--	--	Company information to calculate concen-tration, not to be forwarded	Company information to calculate concentration, not to be forwarded	--	The amount included in the article is needed to calculate the article weight after processing. Note that the used amount of a mixture may not correspond to the included amount, because some components, e.g. solvents may not remain in / on the article. This information is not forwarded.
06a [34]	Weight of first-time article	Indirectly required for Art. 7(2)	--	--	Weight of FTA	Forward if no SVHC is included. Otherwise: 06b	--	Only need in combination with conc. In FT to determine total amount
06b	Weight of interim article	Indirectly required for Art. 7(2)	--	--	--	Weight of IA if SVHC is included during processing (recal-culation)	--	If SVHC is included, the weight of the article is changed by the amount of the substance / mixture added.
07a	Amount of SVHC in first-time article	Indirectly required for Art. 7(2)	--	--	Amount of SVHC in FTA, if conc. > 0.1%	Forward if no SVHC is included, otherwise: 07b	--	Under "once-always" AP-FA may have to sum up the amount in all "first time articles" included in the final product
07b	Amount of SVHC in interim article	Indirectly required for Art. 7(2)	--	--	--	Amount of SVHC in IA if conc. > 0.1% and if SVHC is added to FTA/IA during processing	--	If IA adds SVHC during processing the total amount in the article may change and different information forwarded than obtained.
08a	Conc. of SVHC in FTA (% w/w)[35]	Indirectly required for Art. 7(2)	--	--	Conc. of SVHC in FTA if above 0.1%	Forward	Forward	AP-FTA and AP-IA should forward the concentration per SVHC in the FTA/IA. AP-FA forwards information from his suppliers but

[32] The concentration in the mixture must be known to producers of first time articles and producers of interim articles who include CS in mixtures to an article in a manner that would require recalculation of the total CS content. The concentration range in the safety data sheet is not sufficient. If the CS is used as substance and not in mixtures, 100% should be entered as concentration.

[33] Formulators are not obliged to provide the exact concentration but only concentration ranges. However, in order to check the concentration thresholds along the entire supply chain, the content should be provided as precisely as possible (uncertainties about upper/lower limits increase per each step in the supply chain). If the concentration is below the cut-off limits of REACH Art. 14, no communication is legally required.

[34] The three green shaded fields are interlinked as the value of one can be calculated from the other two.

			Information that should be forwarded by the supply chain actor / entered into the information tool					
#	Type of information	Status	M/I[27]	F[28]	AP-FTA[29]	AP-IA[30]	AP-FA[31]	Comment
								may delete the exact concentration.
08b	Conc. Of SVHC in IA (% w/w)	Directly required for Art. 33	--	--	--	Conc. Of SVHC in IA if added to FTA/IA during processing	Forward	IA may have to recalculate the concentration in the IA if he adds a SVHC in processing FTA/IA

[35] In order to enable all actors to a) sum up the total CS content in their articles to check, whether a notification is required and b) to assess whether or not additional information on safe use are needed or voluntarily provided, the concentration must be known rather than "just" the information whether or not the 0.1% threshold is exceeded.

8.2 Information helpful to check if a use has already been registered

If an article producer or importers has to notify the content of candidate substances in articles (Article 7.2) depends, among others, on the total tonnage in all articles; hence, it is possible that AP-FTA does not but AP-IA and/or AP-FA do have to notify (accumulated amounts in all articles). To determine if a use is already registered, it is not sufficient if the registered use descriptors cover the use[36]. Nevertheless, the use descriptors should be communicated. Information in grey-shaded data fields is principally available in ECHA's database of registered substances and therefore does not necessarily have to be communicated. Since article producers may not be familiar with retrieving information from ECHA's database of registered substances and to provide complete information in the tools, the use descriptors are included in the comprehensive data set.

Table 11: Type of information and actor specific data input related checking registration of a use

		Information that should be forwarded by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
10	Substance function	App. R-12-6	Possible function(s)	Function in FTA	Forward	--	Voluntary for registrants. Information may also support assessment of releases
11	Registered ACs[37]	AC	Forward	Relevant ACs	Forward	--	The AC should be further specified to enable a better assessment of risk. This has relevance for an assessment of Art. 7(2).
12	Registered PROCs[38]	PROCs	Relevant PROCs	Forward	Forward	--	Exemption may apply if the process by which the SVHC is introduced into the article is registered
13	Registered PCs[39]	PC	Relevant PCs	Forward	Forward	--	The SVHC's function in the article should be registered but this is not necessarily covered by the PC (type of mixture)
14	Registered SUs[40]	SU	Relevant SUs	Forward	Forward	--	
15	Use registered	--	--	Yes/no	Yes/no	--	If AP-FTA / AP-IA check if a use is registered, they could forward their conclusion. This includes registering a

[36] The article category (AC) needs to be specified into more detail according to the ECHA SiA guidance to enable a deeper assessment of the risks that originate from the presence of SVHC in articles. It was not in the scope of the project to elaborate which information types are needed. The use descriptors are nevertheless included because they may be helpful for any (future) use of the tool.

[37] AC: Article Category

[38] PROC: process category.

[39] PC: product category

[40] SU: Sector of Use

		Information that should be forwarded by the supply chain actor / entered into the information tool					
#	Type of information	M/I	F	AP-FTA[29]	AP-IA[30]	AP-FA[31]	Comment
							SVHC (Art. 7(1)).

8.3 Information related to the human health hazards of the substance

The decision on which information on the conditions of safe use is needed among others depends on the human health hazards of the substance. If a substance has no hazardous properties to human health, the assessment of respective risks can be skipped. Communication on hazardous properties is legally required for manufacturers, importers of substances and formulators of mixtures in the safety data sheet. It is not required for article producers and hence voluntary and supportive for the downstream actors to take responsibility and comply with legislation in general.

The information in the following table is principally available ECHA's database of registered substances and the C&L-inventory. It may be easier to retrieve the information from these sources than requesting it along the supply chain.

Table 12: Human health hazard information and actor specific data input (conditioned, structured information to be provided under Art. 33).

		Information that should be forwarded by the supply chain actor / entered into the information tool					
#	Type of information	M/I	F	AP-FTA[29]	AP-IA[30]	AP-FA[31]	Comment
20	Classification as CMR	CMR class.	Forward	Forward	Forward	Effect description	If available, information on whether or not the SVHC has an effect threshold
21	Hazardous by inhalation (including STOT)	Inhalation class.	Forward	Forward	Forward	Effect description	The classification should be provided as H-statements
22	Hazardous by ingestion (including STOT)	Oral class.	Forward	Forward	Forward	Effect description	The classification should be provided as H-statements
23	Hazardous by dermal contact (including STOT)	Dermal class.	Forward	Forward	Forward	Effect description	The classification should be provided as H-statements
24a	DNELs/DMELS workers inhalation	DNEL/DMEL	Forward	Forward	Forward	--	Values in ECHA's database of registered substances
24b	DNELs/DMELS workers dermal	DNEL/DMEL	Forward	Forward	Forward	--	Values in ECHA's database of registered substances
25a	DNELs/DMELS consumers inhalation	DNEL/DMEL	Forward	Forward	Forward	--	Values in ECHA's database of registered substances
25b	DNELs/DMELS consumers oral	DNEL/DMEL	Forward	Forward	Forward	--	Values in ECHA's database of registered substances
25c	DNELs/DMELS consumers dermal	DNEL/DMEL	Forward	Forward	Forward	--	Values in ECHA's database of registered substances

8.4 Information related to environmental hazards of the substance

The decision on which information on the conditions of safe use is needed among others depends on the environmental hazards of the substance. If a substance has no hazardous properties to the environment, the assessment of respective risks can be skipped. Communication on hazardous properties is legally required for manufacturers, importers of substances and formulators of mixtures in the safety data sheet. It is not required for article producers and hence voluntary and supportive for the downstream actors to take responsibility and comply with legislation in general.

The information in the following table is principally available in ECHA's database of registered substances and the C&L-inventory. It may be easier to retrieve the information from these sources than requesting it along the supply chain.

Table 13: Environmental hazard information and actor specific data input (conditioned, structured information to be provided under Art. 33).

		Information that should be <u>forwarded</u> by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
30	Environmental classification	Env. Class.	Forward	Forward	Forward	Effect description	If no Env classification and no other Env hazards (PBT/vPvB or Art. 57f), no info on safe use for environment needed
31	PBT/vPvB	Explicit in SDS	Forward	Forward	Forward	Effect description	"safe use" is not possible (REACH inconsistency) → Exposure minimization
32	SVHC properties acc. to Art. 57(f)	Explicit in SDS	Forward	Forward	Forward	Effect description	Details of the type of SVHC properties that are met e.g. endocrine disruption
33a	PNEC aquatic	PNEC	Forward	Forward	Forward	Effect description	Only helpful if not PBT/vPvB; otherwise emission minimization for the environment and no further assessment need
33b	PNEC soil	PNEC	Forward	Forward	Forward	Effect description	May be needed if articles are used outdoors

8.5 Information on how the substance is included in the article

Table 14 lists information on how the substance is included in the article; i.e. if it is contained or included into or onto matrixes and how. This information supports the estimation of the substance's emission potential from the article. This information is generated by the article producers, because they determine by the production of the first time article and its processing how the substances are actually included.

Table 14: Type of information and actor specific data input related to how the substance is included in the article.

		Information that should be <u>forwarded</u> by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
40	Containment of SVHC in article	Assumption in CSR on containment of SVHC in article, related PROC	Modify assumption on containment, related PROC	Type of containment (e.g. material, description of physical barrier)	Type of containment from AP-FTA and any additional added by AP-IA	Type of contain-ment	Could also be regarded an RMM. Specifies also if SVHC is on the article's surface (e.g. as coating) or "inside". Could be communicated to end-users e.g. to describe why there is no direct risk to humans.
41	Inclusion of SVHC in matrix	Assumption in SVHCR on matrix inclusion, related PROC	Modify matrix inclusion, if mixture has matrix (e.g. polymers)	Forward Modify if inclusion in matrix during FTA manufacture (type of binding, if possible)	Forward Modify if SVHC is added	--	Could be communicated to end-users e.g. to describe why there is no direct risk to humans.
42	Part of article SVHC is included in	--	--	Location in FTA (inside, surface etc.)	Location in IA	--	Important to estimate if processing or direct contact could lead to exposures
43	Migration / diffusion rate	--	Depends on types of mixtures and information on matrix	Generate information in-house knowledge	Forward Modify if SVHC is added	--	If not measured, this can be deduced from the vapour pressure, solubility and/or LogKow or determined with models

8.6 Information on the physico-chemical properties of the substance

Table 15 lists information on the physico-chemical properties of substances, which are relevant to estimate the emission potential of SVHC from articles. Parts of the information in the following table are principally available in ECHA's database of registered substances and therefore do not necessarily have to be forwarded (grey shaded row headings).

Table 15: Type of information and actor specific data input related to the physic-chemical properties of the substance.

		Information that should be forwarded by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
50	Vapour pressure	X	Forward[41]	Forward	Forward	--	Indicates release potential from FTA/IA matrix. Relevant for workers, consumers and environment.
51	Water solubility	X	Forward[41]	Forward	Forward	--	Indicates release potential from FTA/IA matrix. Relevant for environment.
52	Log Kow	X	Forward[41]	Forward	Forward	--	Indicates release potential and behaviour in water.
53	Persistence	X	Forward[41]	Forward	Forward	--	Persistence helpful for environmental assessments and relevance waste stage.

[41] This information is to be communicated for substances with the Safety Data Sheet under REACH. However, it is not normally part of the SDS of mixtures. Therefore specific communication by the formulator is needed. The information is available on the internet (Annex XV dossiers or ECHA dissemination data base) in addition.

8.7 Information on operational conditions of use

Table 16 includes information on the operational conditions of use during processing of articles and during the treatment of article wastes. This data may be forwarded as generic information from the registrants' CSAs and modified / refined according to the actual conditions by the article producers. It is also likely that the article producers generate the information based on their knowledge of the processes and the articles.

Table 16: Type of information and actor specific data input related to operational conditions of use (article processing and service life)

		Information that should be <u>forwarded</u> by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
60	OCs[42] on dust formation (workplace)	Limitation of abrasive / dusting processes if assumed in CSR	Forward	Limitation of abrasive processing of FTA; Limitations for inclusion in IA/FA due to dusting/abrasion	Limitation of abrasive processing of IA Limitations for inclusion in FA due to dusting/abrasion	Limitation of abrasive uses of the FA	Dust may reach environment. More specific advice possible, if exact processes are known.
61	OCs on emissions to air (workplace)	Limitation of high temperature / energy processes if assumed in CSR	Forward	Limitation of temperature ranges in processing FTA; Limitations for inclusion in IA/FA due to temperature	Limitation of temperature ranges in processing IA; Limitations for inclusion in FA due to temperature	Limitation of temperatures during use	Emissions may reach environment Advice to consumers could be e.g. "Avoid storing in areas exceeding 70 °C".
62	OCs on dermal contact of workers	Limitation of dermal contact, as identified in CSR	Forward Modify if matrix inclusion	Limitation of dermal contact with FTA Limitations for inclusion in IA/FA due to possibilities of skin contact	Limitations for inclusion in FA due to possibilities of skin contact	--	There shouldn't be limitations for consumers to "touch" the article (general product safety)
63	OCs release to water	Limitation of water contact during use as assumed in CSR	Forward Modify if matrix inclusion	Limitation of water contact of FTA Limitations for inclusion in IA/FA due to potential water contact	Limitations for inclusion in FA due to potential water contact	Limitation of water contact during storage and use	The information for the end-user of the article could be e.g. that the article is not for outdoor use.
64	CoU inhalation consumers	Limitation of temperatures where article can be used if assumed in CSR	Forward	Limitations of use temperatures for IA/FA due to possible inhalation exposure	Exclusion of FA which may be used under high temperature conditions	--	M/I may recommend maximum temperature; APs may specify by excluding these conditions (FTA) and

[42] The conditions of use to implement in the supply chain for the use of the CS in the mixture are not considered, as they are communicated via the SDS. The information relates to the processing of first-time articles or interim articles and relate to the release potential of the substance.

		Information that should be <u>forwarded</u> by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
							excluding the use of IAs in FA
65	CoU ingestion consumers	Exclusion of articles with potential oral contact	Forward	Limitations of uses in IA/FA with potential oral exposures	Exclusion of FA which may involve oral contact	--	M/I may limit oral exposure; APs may specify by excluding these conditions (FTA) and excluding the use of IAs in FA
66	CoU dermal consumers	Limitation of skin contact if assumed in CSR	Forward	Limitations of uses in IA/FA with potential dermal exposures	Exclusion of FA which may involve dermal contact	--	M/I may limit dermal contact; APs may specify by excluding these conditions (FTA) and excluding articles with dermal contact
67	CoU environment	Limitation of uses, if assumed in CSR	Forward	Limitations of uses in IA/FA with potential environmental exposures	Exclusion of FA which may involve water contact	--	M/I may recommend avoiding water contact; APs may specify by excluding these conditions (FTA) and excluding the use of IAs in FAs

8.8 Information on RMMs

Table 17 contains the data fields on risk management measures for article processing. This information may be generated by M/I in the substance registration but is likely to be quite generic. Along the supply chain, the information on how the articles are treated and which risk management measures may be needed to prevent exposure and risks becomes more specific. Hence, each actor contributes to the refinement of the information on conditions of use and RMMs. There are no risk management measures for the service-life of articles; any measures to control emissions are integrated into the article. Therefore, AP-FA is assumed to include any advice for safe use in the conditions of use of the final article.

Table 17: Type of information and actor specific data input related to risk management measures (article processing)

		Information that should be <u>forwarded</u> by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
70	RMMs[43] release to (workplace) air	RMMs to prevent release from article processing, as in CSR	Forward Modify depending on matrix	RMMs for FTA processing	Forward to IA	--	RMM to protect workers from workplace air exposures, e.g. air extraction systems
71	RMMs Release to air	RMMs to prevent release to environment from processing, as in CSR	Forward Modify depending on matrix	RMMs for collected air from workplace before release	Forward to IA	--	RMM to treat collected air emission, e.g. waste gas incineration
72	RMMs dermal contact	RMMs to prevent dermal exposures during processing, as in CSR	Forward Modify depending on matrix	Forward Modify depending on article inclusion	Forward to IA	--	If the substances is included in article parts without dermal contact, RMMs can be omitted
73	RMMs[43] release to water	RMMs to prevent release from articles, as in CSR	Forward Modify depending on matrix	RMMs to prevent release to water during processing	Forward to IA	--	Wastewater from processing may have to be treated (biological treatment, oxidation…)

[43] The RMMs relate to the use of the article and not the use of mixtures to produce the articles as they are communicated via the SDS. RMMs may either relate to preventing the release of a CS from the article (e.g. physical barriers to evaporation / leaching – c.f. containment) or to reducing the final exposure. The latter only applies to workers processing articles and to the environment but not to consumers. RMMs for consumers (AP-FA) should always be voluntary, because according to the general product safety directive, articles should be inherently safe; i.e. without any additional RMMs.

8.9 Information on safe disposal

EoL articles could be disposed of as municipal waste or collected separately, either in the general material recycling schemes (mainly packaging such as paper, glass etc.) or in the frame of specific waste regimes (cars, waste electronic and electrical equipment etc.). Municipal waste is either incinerated or land-filled. Waste for recycling is separated, pre-processed and recycled. Under specific waste regimes, the technologies and treatment steps may be more complex but essentially involving sorting, pre-treatment and either recovery, reuse, recycling or final disposal. Consumers can only influence to which collection pathway they discard their waste; enterprises may be able to determine also the (pre-) treatment technology. Therefore, information guiding the disposal behaviour of the actors would relate to:

- Material recycling on-site (mostly AP-FTA): wastes from article production which could be recycled / reused. Information on whether or not recycling is safe for workers and the environment and if the recycled material can be used as the original one is needed.
- Disposal of article wastes by commercial actors: this may affect production wastes from processing of articles of any article producer. It should be communicated, if a specific treatment technology or disposal pathway is necessary and/or the waste is to be considered as hazardous.
- Disposal of articles by consumers: relevant for consumers is only the information on the collection scheme to enter the articles into: municipal waste, general recycling wastes or specific collection schemes.

If information from chemicals legislation should enable safer waste treatment and inform the **operators of waste treatment** installations and processes on the content of CS/SVHC/HS in articles, **all information that is relevant to the safe use (c.f. Section 8.5 above) would be helpful** also to them**.** This information is not doubled here, also because the operators of waste treatment installations are not recipients of articles and hence not in the focus of the project.

Although the life-cycle stage “waste” should be part of the M/I’s exposure assessment, information on safe disposal is not likely to be included in ECHA’s database of registered substances (in the near future). At present there are no information fields in ECHA’s database of registered substances to display waste-related information.

The information in the orange-shaded cells may be needed to a) identify if under certain conditions of use a risk could occur during the waste processes of SVHC-containing articles and b) to provide the operators of waste treatment installations with information on workers and environmental protection. Consequently, AP-FTA, AP-IA (and potentially AP-FA) may forward information in DF 82 to 87 to the waste treatment operators AND to their customers.

Table 18: Type of information and actor specific data input related to information on safe disposal

		Information that should be forwarded by the supply chain actor / entered into the information tool					
#	Type of information	M/I	F	AP-FTA[29]	AP-IA[30]	AP-FA[31]	Comment
80	Hazardous waste	Indication if SVHC makes waste harmful; concentration threshold	Forward	Indication if processing waste from FTA is hazardous	Indication if process-sing waste from IA is hazardous	Disposal option (municipal, recycling, separate collection)	Criteria according to waste legislation
81	Waste code in the list of waste	Waste code for article wastes as identified in CSR	Forward	Relevant Waste code for FTA, IA and FAs	Relevant Waste codes for IA, FA		Different codes apply to production wastes and EoL wastes.
82	OCs on workplace air from waste	Conditions to avoid / limitations; as in CSR	Forward	Forward Also provide to waste treatment installation	Forward Also provide to waste treatment installation	--	Information is provided to the next actor so he can communicate to the waste treatment operator
83	OCs on dermal contact from waste	Conditions to avoid / limitations; as in CSR	Forward	Forward Also provide to waste treatment installation	Forward Also provide to waste treatment installation	--	
84	OCs release to water from waste	Conditions to avoid / limitations; as in CSR	Forward	Forward Also provide to waste treatment installation	Forward Also provide to waste treatment installation	--	
85	RMMs release to workplace air from waste	RMMs to implement to prevent workplace exposure; as assumed in CSR	Forward	Forward Also provide to waste treatment installation	Forward Also provide to waste treatment installation	--	
86	RMMs dermal contact from waste	RMMs to implement to prevent dermal exposure; as assumed in CSR	Forward	Forward Also provide to waste treatment installation	Forward Also provide to waste treatment installation	--	
87	RMMs release to water from waste	RMMs to implement to prevent aquatic exposure; as assumed in CSR	Forward	Forward Also provide to waste treatment installation	Forward Also provide to waste treatment installation	--	
88	Treatment technologies to avoid	Exclusion of technologies[44], based on substance properties	Forward Modify for other mixture	Forward Add exclusions based on FTA	Forward Add exclusions based on IA	Disposal option (municipal, recycling,	Example: M/I excludes thermal treatment; F/APFTA and AP-IA forward; AP-FA informs consumers to

[44] E.g. thermal treatment, composting, landfilling, shredding

		Information that should be <u>forwarded</u> by the supply chain actor / entered into the information tool					
#	**Type of information**	**M/I**	**F**	**AP-FTA[29]**	**AP-IA[30]**	**AP-FA[31]**	**Comment**
			components			separate collection)	dispose of waste at municipal collection point for special wastes.
89	Specific collection schemes for article wastes	Recommendation of specific waste collection	Forward	Forward Modify recommendation based on FTA	Forward Modify recommendation based on IA	Recommend specific collection scheme to discard article	

9 Guidance on checking if information on safe use of articles is required

The following guidance can be used to check:

- If communication on the safe use of an article is legally required (Art. 33) and if yes, which information must be forwarded,
- If the own use of an article (processing or article service life) is safe,
- which information is important for actors downstream to assess if they comply with legislation on workers protection, environmental protection and/or product legislation,
- which information is helpful for the recipients of articles to assess safe use of their products (service life/disposal) in the context of the producer responsibility.

The guidance is NOT a risk assessment for substances in articles and does not include any quantification of exposures or risks. It should support fulfilling the requirements of REACH Art. 33 and/or target voluntary information provision (supply chain communication) on substances in articles.

9.1 Focusing of checks for information needs

SVHC on the candidate list are substances that the regulators have foreseen for phase-out. Therefore, their use should be minimized and ceased if possible. Hence, the first step should always be to check, whether or not it can be substituted in the article.

As default an intuitive processing or use of the article by workers and/or consumers should be assumed as "normal and reasonably foreseeable conditions of use" of the article. A reasonable worst case should be built regarding contact of children with the article. When checking whether or not this intuitive use and worst case of children's contact do not cause risks (no information must be provided) or should be modified (information on conditions of use or risk management measures is needed), priority should be given to checking the following:

- Processing of articles – production of final articles (FA) from first-time articles (FTA) and interim articles (IA):
    - Emissions to air and exposures of workers via inhalation from abrasive processing or processing at high temperatures.
    - Emissions to the environment via the air from abrasive processes (dusts) or processing at high temperatures (fumes), emissions to water from processes with intense water contact
- Service life of the final article:
    - Potential contact of children with the article by swallowing (size of the final article), oral, dermal and inhalative contact,
    - Indoor emissions, potential inhalation and dermal exposure of consumers
    - Emissions from the article to water during outdoor use.
- Waste stage:
    - Potential risks to workers or the environment from emissions to air (abrasive processes during waste treatment) or to water (leaching, intense water contact)
    - Potential risks or problems during waste treatment or for recycling materials due to the presence of SVHC in a material or component of an article.

The following principles and rules can help targeting the assessment by excluding irrelevant aspects and focusing on the main hazards, emissions and exposures:

- Eye hazards from substances in articles can be disregarded because intense direct eye contact with the substance is very unlikely.
- Acute environmental hazards can be disregarded because it is unlikely that the emissions from articles would lead to exposure levels causing an acute effect in the environment. According to the IR/CSR guidance by ECHA risk assessment is to be performed at regional level.
- Any direct contact of children with CS/SVHC (oral, dermal, inhalative) should be avoided if possible.

Each actor in the chain receives part of the information from the supplier and may forward the information as obtained or adapt it to the specific use in the article he produces. Any placer on the market may want to have the detailed base information on the substances in articles in order to take his producer responsibility seriously.

It is likely that the registrants do not consider or only very generally assess the risks from the life-cycle stages of articles (article processing, service life and disposal). Therefore, most of the information on emissions, exposures and uses of articles is more likely to be generated by the article producers than to be received from upstream. The article producers will therefore need to make assumptions on the conditions of use based on the knowledge of the function of the article down the supply chain (as part, as component as final complex article).

9.2 Obligatory information under Art. 33 and best-practice communication

As a general principle, information provision should be regarded as obligatory for candidate substances, when the article processing or the normal, intuitive use of an article (service-life) would result in emissions or exposures that could cause risks.

Best-practice communication should be regarded useful in cases, where the emissions and exposures from substances in articles could be reduced or prevented by implementing different conditions of use.

Any checking of use can result in the conclusion that:

- The intuitive use does not lead to risks and no specific communication on the safe use of the article is required;
- The intuitive use may cause potential risks or unnecessary additional exposures to workers, consumers or the environment which could be reduced by changed operational conditions or the implementation of risk management measures. In this case, it is possible to:
    - Recommend measures for safe use which are “obvious” and/or possible for that type of article, including substitution, based on a precautionary approach;
    - Make a detailed risk assessment according to the ECHA guidance and review the indication of risk as well as the need to communicate information.

If the substance is a PBT/vPvB or a non-threshold CMR Cat. 1 or 2, the assessment and a potential release is identified. In any case, the conditions of use that minimize emissions and exposures should be recommended because for these substances it is not possible to assess, if a use is safe (no level below which no effects would occur).

9.3 Considerations according to the life-cycle stages

For any article processing, employers have to ensure that workers are not exposed to risks from chemicals at the workplace. Article producers should therefore provide their customers with relevant information, who further process “their” articles. This enables them to perform an assessment of risks from the processing these articles.

Article processing companies may have to comply with environmental or installation related legal requirements or product related legislation. They may therefore also require information related to the environment and on the specific substance content in the article. Article producers should therefore consider the relevance of information for commercial customers further processing the articles and provide them with this information if necessary.

During their service-life, articles may be used by workers and consumers. The conditions of use are likely to be similar but may be more intense for workers, e.g. if the article is a power tool which is used only seldom by the consumer but regularly and for longer durations by the workers. The most relevant exposure pathway for workers and consumers during service-life is inhalation via air. Dermal exposure may be relevant, if the substance is contained on the outer surface of the article or is likely to migrate within the article matrix.

Specific consideration should be given to the safety of children (all exposure routes) and especially vulnerable groups (dermal and inhalative exposure).

The safe disposal of article is determined by the content of hazardous substances and their behaviour in the different treatment processes and the type of the article as such and whether or not specific collection schemes and treatment technologies exist (c.f. introduction to data fields in Section 8.9).

Information on the safe disposal of articles generated from the REACH system does not reach the actors of the waste management chains in a systematic way, because the information chain is structurally broken. Therefore, one option could be to design articles in a way that their disposal is inherently safe (substances contained do not cause risks in the normal treatment technology). Providing information on the substance content of article wastes, in particular for complex articles which undergo substance, material or component recovery, recycling or reuse would be a useful support for the waste treatment sector. This may be organized by implementing respective database systems including product specific recycling information (“recycling pass”).

10 Reporting on substances in articles – data fields and extension of information

In Section 6, information requirements for substances in articles as defined in REACH Art. 33 have been analysed. The list of data fields in the tables in Section 0 represents the "comprehensive data set" that could be forwarded along the supply chain. However, it depends on the actors involved in the communication, which data fields are necessary in a specific case.

In the following, it is analysed how the list of data fields can be used to support the information exchange in the supply chains. It is based on the results from the analysis of existing instruments and the analysis of data requirements and the definition of data fields for communication.

As part of work package 3 we performed the following steps:

- Step 3-1: The list of data fields is used to describe for an example the "comprehensive information". We have chosen the example of communication on hexabromocyclododecane (HBCDD) in expanded polystyrene, used as a part of insulation boards for the construction sector. For each piece of information the availability and the source of the information is documented.
- Step 3-2: Options for communication on substances in articles are discussed with stakeholders. Results of this discussion are used to ensure sufficient acceptance of proposals developed in our project.
- Step 3-3: Art. 33 communications between business actors can be supported by reference to publicly available substance-specific information. We call such compilations "substance profiles". They are described in Section 13.1.
- Step 3-4: Information packages ("modules") are described to develop the present "minimum communication" on CS to a sufficient communication. These modules refer to the information given in the data fields of the "comprehensive list". We describe the modules in Section 13.2.

Note: We refer in the following sections to the data fields of the "comprehensive data set" as developed in Section 0. We develop advice how to use these data fields for an effective communication on CS in the supply chains. There are many possibilities for the technical implementation of this communication, e.g. in specific formats. Actors of the supply chains can use the data fields described to incorporate them into tools which they already use for communication. This enhances the attractiveness of the approach. It avoids an always increasing number of tools which are not used in practice.

11 Example HBCDD in EPS for insulation boards: the comprehensive data set

11.1 General information on the example and data fields

In Table 10 to Table 18, the "comprehensive data set" that could be forwarded along the supply chain is presented. In the following, an example is given for how this information would be filled in the tables. The example refers to hexabromocyclododecane (HBCDD) used as flame retardant in expanded polystyrene (EPS). EPS becomes part of a final article: an insulation board for buildings.

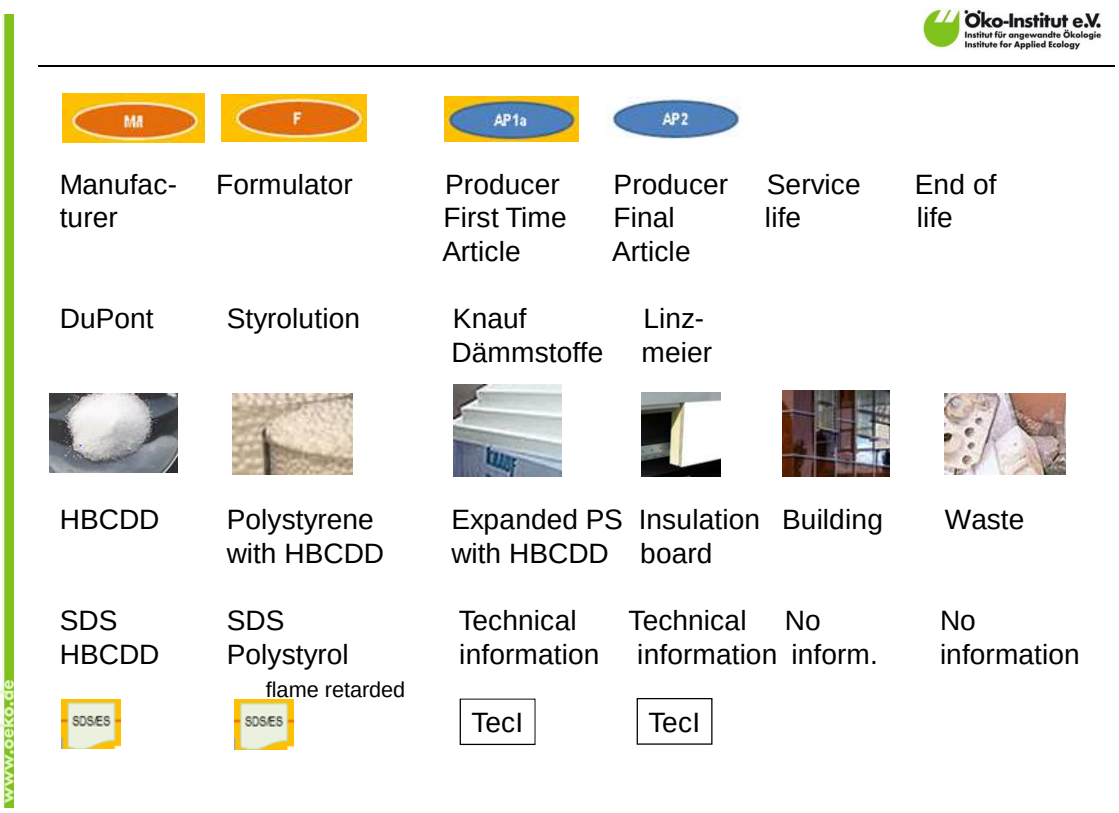


Figure 4: Hexabromocyclododecane (HBCDD) and its use as flame retardant in expanded polystyrene (EPS) for the construction sector. The figure gives examples of actors involved in the supply chain.

SDS: safety data sheet. ES: Exposure scenario. TecI: Technical information.

In the example the focus is on the communication of AP-FTA, the producer of the extended polystyrene.

Data source: For the formulator F, the SDS provided by the supplier contains many of the required information on the candidate substances (CS). Producers of first-time articles receive SDS for CS which they use, and for mixtures which contain CS in concentrations above 0.1%. In general, the SDS of the CS is not available to AP-IA and AP-FA. We indicate which other information source these actors could use if the required information is not forwarded by the F.

In the HBCDD example, information is marked in red if it is generated the first time. If it is only forwarded, it is marked in blue.

Data fields are indexed to support further reference to specific data fields. The cells in the tables are filled from the perspective of the information provider who enables the recipient to comply with his requirements or to take his responsibility.

Remark to the following tables: In some cases, required information has not been found in literature or data bases. In this case, the authors of this study use assumptions based on their knowledge to fill the data fields for the examples. These assumptions are *marked*. As soon as more information becomes available, these assumptions will be replaced.

11.2 Information related to the substance and the article

Table 19 Exemplary information related to the substance and the article, for the example HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA**	**AP-FA**	**Data source and comment on data availability**
01 Substance name	Hexabromo-cyclododecane	Hexabromo-cyclododecane	Hexabromo-cyclododecane	Hexabromo-cyclododecane	Generated M/I, via SDS
02a Registration number	*12345-67-89*	*12345-67-890*	*12345-67-890*	--	Generated M/I, via SDS
02b EINECS number	247-148-8	247-148-8	247-148-8	--	SDS, ECHA's database of registered substances
02c CAS number	25637-99-4	247-148-8	25637-99-4	--	SDS, ECHA's database of registered substances
03a Product name	Hexabromocyclododecane	PS	*D/E-PS build 8*	*Insulation Rex 4*	information generated by AP-FTA
03b Internal product identifier	Internal	--	--	--	Not to be communicated
04 Intended final article	ERCs 10a, 11a, 12a AC 13	ERCs 10a, 11a, 12a AC 13.	Insulation boards, part of an complex insulation product (FA)	Insulation boards	Use descriptors: information from M, source: SDS, ECHA's database of registered substances /use in FTA: information from AP-FTA /Memo: Explanation of abbreviations required
05a Concentration of SVHC in mixture	-	0.7 %			Knowledge of formulator
05b Amount of mixture included in FTA/IA			0.004 kg	0.004 kg	Knowledge of AP-FTA
06a Weight of first-time article			0.004 kg	0.004 kg	Knowledge of AP-FTA
06b Weight of interim article					There is no interim article in this example
07a Amount of SVHC in first-time article			0.028 kg	0.028 g	Knowledge of AP-FTA, based on information from F related to PS
07b Amount in interim article					There is no interim article in this example
08a Conc. Of SVHC in FTA (% w/w)			0.7%	0.7%	Knowledge of AP-FTA, based on information from F related to PS
08b Conc. Of SVHC in IA (% w/w)					There is no interim article in this example

11.3 Information helpful to check if a use has already been registered

The information which is contained in the ECHA data base in this and in the following tables is marked by grey shaded rows

Table 20: Exemplary information for checking registration of the use of HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Data source and comment on data availability**
10 Substance function	Flame retardant	Flame retardant	Flame retardant	--	Information generated by M, confirmed by F, source: SDS or technical information.
11 Registered ACs	AC 13	AC 13	AC 13	--	information from M, ECHA's database of registered substances
12 Registered PROCs	PROCs 8b, 9, 14, 21	PROC 14, 21.	PROC 21, 24	--	Information generated by M, F, AP 1 / Information from M also documented in ECHA's database of registered substances
13 Registered PCs	PC 19, 32.	PC 32	Flame retardant	--	Information from M, ECHA's database of registered substances / specification from F / further specification from AP-FTA .
14 Registered SUs	SU 10, 12, 18	SU 12	SU 12	--	Information from M, ECHA's database of registered substances / specification from F
15 Use registered	--	--	Use is registered	--	Result of check done by AP 1.

11.4 Information related to the human health hazards of the substances

Parts of the information in the following table is/will be available in the ECHA database for dissemination and therefore does not necessarily have to be forwarded by a communication system/tool for articles but could be retrieved from there (grey shaded rows).

Table 21: Exemplary information and actor specific data input on human health hazards of the substances (conditioned, unstructured information to be provided under Art. 33) for HBCDD in EPS.

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Comment**
20 Classification as CMR	Repr. 2 – H 361, Lact. – H362 /	Repr. 2 – H 361, Lact. – H362 /	Repr. 2 – H 361, Lact. – H362 /	Repr. 2 – H 361, Lact. – H362 /	SDS, if not available: ECHA's database of registered substances, Quality control required!
21 Hazardous by inhalation (including STOT)					
22 Hazardous by ingestion (including STOT)					
23 Hazardous by dermal contact (including STOT)					
24a DNELs/DMELS workers inhalation	Inhalation DNEL 1.43 mg/m3	Inhalation DNEL 1.43 mg/m3	Inhalation DNEL 1.43 mg/m3	Inhalation DNEL 1.43 mg/m3	Information in SDS, or ECHA's database of registered substances, quality control required!? Remark: no DMEL related to Rep 2
24b DNELs/DMELS workers dermal	Dermal DNEL 2040 mg/kg bw / day;	Dermal DNEL 2040 mg/kg bw/day;	Dermal DNEL 2040 mg/kg bw/day;	Dermal DNEL 2040 mg/kg bw/day;	
25a DNELs/DMELS consumers inhalation	Inhalation long term DNEL 0.719 mg/m3	Inhalation long term DNEL 0.719 mg/m3	Inhalation long term DNEL 0.719 mg/m3	Inhalation long term DNEL 0.719 mg/m3	Information in SDS or from ECHA's database of registered substances, quality control required!
25b DNELs/DMELS consumers oral	Oral long term DNEL 0,102 mg/kg bw / day;	Oral long term DNEL 0,102 mg/kg bw / day;	Oral long term DNEL 0,102 mg/kg bw / day;	Oral long term DNEL 0,102 mg/kg bw / day;	Information in SDS or from ECHA's database of registered substances, quality control required!
25c DNELs/DMELS consumers dermal	Dermal long term DNEL 1020 mg/kg bw / day;	Dermal long term DNEL 1020 mg/kg bw/day;	Dermal long term DNEL 1020 mg/kg bw/day;	Dermal long term DNEL 1020 mg/kg bw/day;	Information in SDS or from ECHA's database of registered substances, quality control required!

11.5 Information related to environmental hazards

Table 22: Exemplary information and actor specific data input on environmental hazards of the substances (conditioned, unstructured information to be provided under Art. 33) for HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Comment**
30 Environmental classification	H 410 / R50/53	H 410 / R50/53	H 410 / R50/53	H 410 / R50/53	Information in SDS or ECHA's database of registered substances, quality control required!
31 PBT/vPvB	PBT	PBT	PBT	PBT	Information often missing, in SDS or ECHA's database of registered substances, quality control required!
32 SVHC properties acc. to Art. 57(f)	no	no	no	--	Information often missing, in SDS or ECHA's database of registered substances, quality control required!
33a PNEC aquatic[45]	$PNEC_{aqua}$ (fresh) 0.31 ↔g/l; $PNEC_{aqua}$ (marine) 0.062 ↔g/l; $PNEC_{STP}$ 0.15 mg/l;	$PNEC_{aqua}$ (fresh) 0.31 microg/l; $PNEC_{aqua}$ (marine) 0.062 ↔g/l; $PNEC_{STP}$ 0.15 mg/l;	$PNEC_{aqua}$ (fresh) 0.31 ↔g/l; $PNEC_{aqua}$ (marine) 0.062 ↔g/l; $PNEC_{STP}$ 0.15 mg/l;	$PNEC_{aqua}$ (fresh) 0.31 ↔g/l; $PNEC_{aqua}$ (marine) 0.062 ↔g/l; $PNEC_{STP}$ 0.15 mg/l;	Information in SDS, or ECHA's database of registered substances quality control required!
33b PNEC soil	$PNEC_{sed}$ (fresh) 10 mg/kg sed dw; $PNEC_{sed}$ (marine) 1 mg/kg sed dw; $PNEC_{soil}$ 12.8 mg /kg soil dw;	$PNEC_{sed}$ (fresh) 10 mg/kg sed dw; $PNEC_{sed}$ (marine) 1 mg/kg sed dw; $PNEC_{soil}$ 12.8 mg/kg soil dw;	$PNEC_{sed}$ (fresh) 10 mg/kg sed dw; $PNEC_{sed}$ (marine) 1 mg/kg sed dw; $PNEC_{soil}$ 12.8 mg/kg soil dw;	$PNEC_{sed}$ (fresh) 10 mg/kg sed dw; $PNEC_{sed}$ (marine) 1 mg/kg sed dw; $PNEC_{soil}$ 12.8 mg/kg soil dw;	Information in SDS, or ECHA's database of registered substances quality control required!

[45] For the communication tool it is intended to forward only ONE PNEC value for the aquatic environment as default setting. If more information, e.g. on the marine environment or the STP are necessary, this information should be requested separately. The different information types are included here for illustration. Normally the $PNEC_{aqua}$ (freshwater) will be forwarded.

11.6 Information on how the substance is included in the article

Table 23: Exemplary information and actor specific input on how the substance is included in the article, for the example of HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Comment**
40 Containment of SVHC in article	No water contact	No water contact	In the insulation board, EPS is an internal compound without direct contact to the surrounding environment / Substance is uniformly incorporated into the polymer matrix	In the insulation board, EPS is an internal compound without direct contact to the surrounding environment / Substance is uniformly incorporated into the polymer matrix	Generic information by manufacturer (condition (main use for HBCDD) and specific information (recommendation) by APs. Knowledge of AP-FTA regarding the final article. (Source: description in IOM 2008).
41 Inclusion in matrix	Incorporation in matrix, no binding	Incorporation in matrix, no binding	Incorporation in matrix, no binding	Substance is not bound in the matrix	Knowledge of manufacturer (main use for HBCDD
42 Part of article SVHC is included in					
43 Migration / diffusion rate	Low rate of migration of HBCDD from plastic matrix; enhanced migration, if particles are formed	Low rate of migration of HBCDD from plastic matrix; enhanced migration, if particles are formed	Low rate of migration of HBCDD from plastic matrix; enhanced migration, if particles are formed	--	Knowledge of manufacturer (main use for HBCDD) or F. (Source: HBCDD background document)

11.7 Information on the physico-chemical properties of the substance

Table 24: Exemplary information and actor specific input on physic-chemical properties, for the example HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Comment**
50 Vapour pressure	6.3 x 10-5 Pa (21 oC)	6.3 x 10-5 Pa (21 oC)	6.3 x 10-5 Pa (21 oC)	--	SDS or ECHA's database of registered substances
51 Water solubility	65,6 ↔g/l (technical product)	65,6 ↔g/l (technical product)	65,6 ↔g/l (technical product)	--	SDS or ECHA's database of registered substances
52 Log Kow	5,6 (technical product)	5,6 (technical product)[41]	5,6 (technical product)	--	SDS or ECHA's database of registered substances
53 Persistence	persistent according to Annex XIII criteria	persistent according to Annex XIII criteria	persistent according to Annex XIII criteria	--	SDS or ECHA's database of registered substances, information is often missing, quality control required

11.8 Information on operational conditions of use

Table 25: Exemplary information and actor specific input related to operational conditions of use, for the example HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Comment**
60 OCs on dust formation (workplace)	-	*Avoid particle formation*	*Avoid particle formation*	*Avoid particle formation*	Information should be part of M CSR and communicated with SDS or technical product information (F to AP-FTA, AP-FTA to AP-IA,AP-IA to AP-FA) ((Source: IOM 2008)
61 OCs on emissions to air	*Avoid use of EPS at elevated temperatures (> 200 oC);*	*Avoid use of EPS at elevated temperatures (> 200 oC);*	*Avoid use of EPS at elevated temperatures (> 200 oC);*	*Ensure that containment of EPS keeps intact / Avoid formation of EPS particles*	Information should be part of M CSR and communicated with SDS or technical product information (F to AP-FTA, AP-FTA to AP-IA,AP-IA to AP-FA) ((Source: IOM 2008)
62 OCs on dermal contact of workers	*Avoid use of EPS at elevated temperatures (> 200 oC);*	*Avoid use of EPS at elevated temperatures (> 200 oC);*	*Avoid use of EPS at elevated temperatures (> 200 oC);*	*Avoid use of EPS at elevated temperatures (> 200 oC);*	Information should be part of M CSR and communicated with SDS or technical product information (F to AP-FTA, AP-FTA to AP-IA,AP-IA to AP-FA) ((Source: IOM 2008)
63 OCs release to water	*Avoid contact of EPS to water.*	*Avoid contact of EPS to water.*	*Enclose insulation material between wall and outer surface to ensure no wetting of the material. Ensure physical barrier to soil*	*Enclose insulation material between wall and outer surface to ensure no wetting of the material. Ensure physical barrier to soil*	Information is specified by AP-FA
64 CoU inhalation consumers			*Enclose insulation material between wall and outer surface to ensure no contact with consumers.*	*Enclose insulation material between wall and outer surface to ensure no contact with consumers.*	Information is specified by AP-FA
65 CoU ingestion consumers			*Enclose insulation material between wall and outer surface to ensure no contact with consumers.*	*Enclose insulation material between wall and outer surface to ensure no contact with consumers.*	Information is specified by AP-FA
66 CoU dermal consumers			*Enclose insulation material between wall and outer surface to ensure no contact with consumers.*	*Enclose insulation material between wall and outer surface to ensure no contact with consumers.*	Information is specified by AP-FA
67 CoU environment					

11.9 Information on RMMs

Table 26: Exemplary information and actor specific input for information on RMMs, for the example HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Comment**
70 RMMs release to (workplace) air	*Use local exhaust ventilation and personal respiratory protection in case of particle formation (abrasive processes, cutting)*	*Use local exhaust ventilation and personal respiratory protection in case of particle formation (abrasive processes, cutting)*	*Use local exhaust ventilation and personal respiratory protection in case of particle formation (abrasive processes, cutting)*	*Use personal respiratory protection in case of particle formation (abrasive processes, cutting)*	Information should be part of M CSR and communicated with SDS or technical product information (F to AP-FTA, AP-FTA to AP-IA, AP-IA to AP-FA) ((Source: IOM 2008)/ Personal respiratory protection requires specification (which kind of filter?).
71 RMMs release to air					
72 RMMs dermal contact	*Use neoprene gloves to avoid direct contact with HBCDD*	*Use neoprene gloves to avoid direct contact with HBCDD*	*Use neoprene gloves to avoid direct contact with HBCDD*	*Use neoprene gloves to avoid direct contact with HBCDD*	Information should be part of M CSR and communicated with SDS or technical product information (F to AP-FTA, AP-FTA to AP-IA,AP-IA to AP-FA) ((Source: IOM 2008)
73 RMMs release to water	*Water contact to be avoided*	*Water contact to be avoided*	*No specific RMMs except enclosure of material*	--	AP-FTA specifies based on knowledge of the article

11.10 Information on safe disposal

Table 27: Type of information and actor specific data input related to information on safe disposal, for the example HBCDD in EPS

	Information that should be forwarded by the supply chain actor / entered into the information tool				
Type of information	**M/I**	**F**	**AP-FTA[29]**	**AP-FA[31]**	**Comment**
80 Hazardous waste	Articles contain SVHC; should be disposed only from licensed hazardous waste disposal agent;	Articles contain SVHC; should be disposed only from licensed hazardous waste disposal agent	Articles contain SVHC; should be disposed only from licensed hazardous waste disposal agent	Communicate hazard to "builder" for later deconstruction	Information difficult to get / for HBCDD EPS is main use, therefore information should be generated in CSR of M (source of information: from safety phrase S56, and IOM 2008)
81 Waste code in the list of waste	*to be communicated from the M for SVHC ***needs specification***	Waste code adapted to use / Waste from buildings, 17 02 04* glass, plastic and wood containing or contaminated with dangerous substances	*to be given for FTA from AP-FTA/ Waste from buildings, 17 02 04* glass, plastic and wood containing or contaminated with dangerous substances	Waste code to professional users/ Waste from buildings, 17 02 04* glass, plastic and wood containing or contaminated with dangerous substances	Data for SVHC from SDS, not included in ECHA's database of registered substances/ code for FTA, IA, FA from AP-FTA, AP-IA, AP 2 / EU Catalogue of Wastes
82 OCs on workplace air from waste	*Avoid temperatures above 200 oC*	Avoid temperatures above 200 oC	Avoid temperatures above 200 oC	Avoid temperatures above 200 oC	Information should be generated in CSR of M for main uses, often not the case. (Source: IOM 2008)
83 OCs on dermal contact from waste					
84 OCs release to water from waste	*Avoid contact with water*	Avoid contact with water	Avoid contact with water	Avoid contact with water	Information should be generated in CSR of M for main uses, often not the case.
85 RMMs release to workplace air from waste	Waste should be disposed only from licensed hazardous waste disposal agent;	Waste should be disposed only from licensed hazardous waste disposal agent;	*Incineration of solid waste only under controlled conditions, BAT*	*Incineration of solid waste only under controlled conditions, BAT*	Information should be generated in CSR of M for main uses, often not the case. (Source: IOM 2008)
86 RMMs dermal contact from waste	Waste should be disposed only from licensed hazardous waste disposal agent;	Waste should be disposed only from licensed hazardous waste disposal agent;	*Avoid contact with skin; if contact is possible, carry neoprene gloves.*	*Avoid contact with skin; if contact is possible, carry neoprene gloves.*	Information should be generated in CSR of M for main uses, often not the case. (Source: IOM 2008)
87 RMMs release to water from waste	Waste should be disposed only from licensed hazardous waste disposal agent;	Waste should be disposed only from licensed hazardous waste disposal agent;	Avoid contact with water	Avoid contact with water	Information should be generated in CSR of M for main uses, often not the case.
89 Specific collection schemes for article wastes					

Based on the above compilation of information, the following tables show which data could be communicated by AP-FTA. He is the first actor who produces extended polystyrene with HBCCD. The grey shaded cells contain information available in ECHA's database of registered substances which could be extracted into substance profiles (see below). Blue fonts indicate that information is forwarded as received, red fonts indicated that information is generated by AP-FTA (new or refinement of generic information of registrant).

Table 28: Summary table: Information to be communicated for HBCDD in EPS for insulation boards – from AP-FTA, the producer of flame retarded extended polystyrene.

1 Information related to the substance and the article

Type of information	AP-FTA
01 Substance name	Hexabromocyclododecane
02a Registration number	*12345-67-890*
02b EINECS number	247-148-8
02c CAS number	25637-99-4
03a Product name	*D/E-PS build 6*
03b	
04 Intended final article	Insulation boards, part of an complex insulation product (FA)
05a Concentration of SVHC in mixture	
05b Amount of mixture included in FTA/IA	100%
06a Weight of first-time article	200 g/m3
06b Weight of interim article	
07a Amount in first-time article	1.4 g/m3
07b Amount in interim article	
08a Conc. Of SVHC in FTA (% w/w)	0.7%
08bConc. Of SVHC in IA (% w/w)	

2 Information helpful to check if a use has already been registered

10 Substance function	Flame retardant
11 Registered ACs	AC 13
12 Registered PROCs	PROC 21, 24
13 Registered PCs	Flame retardant
14 Registered SUs	SU 12
15 Use registered	Use is registered

3 Information related to the human health hazard of the substances

20 Classification as CMR	Repr. 2 – H 361, Lact. – H362 /
21 Hazardous by inhalation (including STOT)	
22 Hazardous by ingestion (including STOT)	
23 Hazardous by dermal contact (including STOT)	
24a DNELs/DMELS workers inhalation	Inhalation DNEL 1.43 mg/m3
24b DNELs/DMELS workers dermal	Dermal DNEL 2040 mg/kg bw / day;
25a DNELs/DMELS consumers inhalation	
25b DNELs/DMELS consumers oral	
25c DNELs/DMELS consumers dermal	

4 Information related to environmental hazards

30 Environmental classification	H 410 / R50/53
31 PBT/vPvB	PBT
32 SVHC properties acc. to Art. 57(f)	no
33a PNEC aquatic	$PNEC_{aqua}$ (fresh) 0.31 ↔g/l; $PNEC_{aqua}$ (marine) 0.062 ↔g/l; $PNEC_{STP}$ 0,15 mg/l;
33b PNEC soil	$PNEC_{sed}$ (fresh) 10 mg/kg sed dw; $PNEC_{sed}$ (marine) 1 mg/kg sed dw; $PNEC_{soil}$ 12.8 mg/kg soil dw;

5 Information on how the substance is included in the article

40 Containment of SVHC in article	In the insulation board, EPS is an internal compound without direct contact to the surrounding environment / Substance is uniformly incorporated into the polymer matrix
41 Inclusion in matrix	Incorporation in matrix, no binding
42 Part of article SVHC is included in	
43 Migration / diffusion rate	Low rate of migration of HBCDD from plastic matrix; enhanced migration, if particles are formed

6 Information on the physic-chemical properties of the substance

50 Vapour pressure	6.3 x 10-5 Pa (21 oC)
51 Water solubility	65.6 ↔g/l (technical product)
52 Log Kow	5.6 (technical product)
53 Persistence	persistent according to Annex XIII criteria

7 Information on operational conditions of use

60 OCs on dust formation (workplace)	*Avoid particle formation*
61 OCs on emissions to air	*Avoid use of EPS at elevated temperatures (> 200 oC);*
62 OCs on dermal contact of workers	*Avoid use of EPS at elevated temperatures (> 200 oC);*
63 OCs release to water	*Enclose insulation material between wall and outer surface to exclude wetting of material. Ensure physical barrier to soil*
64 CoU inhalation consumers	*Enclose insulation material between wall and outer surface to exclude contact by consumers.*
65 CoU ingestion consumers	*Enclose insulation material between wall and outer surface to exclude contact by consumers.*
66 CoU dermal consumers	*Enclose insulation material between wall and outer surface to to exclude contact by.*
67 CoU environment	

8 Information on RMMs

70 RMMs release to (workplace) air	*Use local exhaust ventilation and personal respiratory protection in case of particle formation (abrasive processes, cutting)*
71 RMMs release to air	
72 RMMs dermal contact	*Use neoprene gloves to avoid direct contact with HBCDD*
73 RMMs release to water	*No specific RMMs except enclosure of material*

9 Information on safe disposal

80 Hazardous waste	Articles contain SVHC; should be disposed only from licensed hazardous waste disposal agent
81 Waste code in the list of waste	*to be given for FTA from AP-FTA/ Waste from buildings, 17 02 04* glass, plastic and wood containing or contaminated with dangerous substances
82 OCs on workplace air from waste	Avoid temperatures above 200 oC
83 OCs on dermal contact from waste	
84 OCs release to water from waste	Avoid contact with water
85 RMMs release to workplace air from waste	*Incineration of solid waste only under controlled conditions, BAT*
86 RMMs dermal contact from waste	*Avoid contact with skin; if contact is possible, carry neoprene gloves.*
87 RMMs release to water from waste	Avoid contact with water
88 Treatment technologies to avoid	
89 Specific collection schemes for wastes	

12 Stakeholder views on communication on substances in articles

Examples for candidate substances in articles are given in the following table. They have been compiled based on publicly available information on Art. 33 communication. Examples have been selected with quantitative information on amount / concentration of the SVHC in the articles. The table shows for the examples the type of article and the SVHC which it contains. Information on concentration of the SVHC is given in annex 1.8.1.4 (reference to an additional excel-file). Some of the articles contain hazardous substances which are not on the candidate list yet.

Table 29: Examples of articles with candidate substances

Nr.	Article	Candidate substances	Comment
Art1	Backpack	DEHP, DIBP	
Art2	Rubber boots	DEHP, DINP	
Art3	Toilet bag	DEHP	
Art4	Mesh bath sponge	DEHP, DIBP, DINP	
Art5	Optical mouse	DEHP	
Art6	Pencil case	DEHP, DINP	
Art7	Barbecue	DEHP, DINPO, DecaBDE	
Art8	MP3 player	DEHP	
Art9	PS2 controller	DEHP	
Art10	EPS insulation board	HBCDD	
Art11	PVC flooring	DINP	
Art12	Toaster	DINP	
Art13	Rain pants	DINP	
Art14	Upholster sofa	HBCDD, DEHP	
Art15	Sport shoes for children	Lead, dimethylformamid	Cadmium, azo dyes (no Art.33 obligation
Art16	Sport shoes, sneaker	Chromium(VI)	Formaldehyde, azo dyes(no Art33 oblig.)
Art17	Plier	DEHP	PAHs (no rep.obl.yet)
Art18	Teddy bear		Antimony (at present no Art.33 rep. obli.)
Art19	Power Distribution Unit	DEHP, DBP, BBP, HBCDD	
Art20	Desktop Computer	DEHP, DBP, BBP, HBCDD	
Art21	Snorkeling set	DEHP, DINP, DNOP	Cyclohexanone, dimethyltindicloride (no Art. 33 rep.obl.yet)

For further details on content of CS in the articles, see excel- file „UBA_0_1%_articles_examples“ provided as Annex to this report.

At present, the implementation of Art. 33 requirements in supply chains takes place at a minimum level, if at all. In most cases, only qualitative information is given that an article contains a candidate substance.

This refers to data fields.

DF01 Substance name
DF03a/DF03b Product name

Even basic information is often not communicated. Articles producers AP-IA and AP-FA cannot calculate the concentration in a complex article if they don’t have the following information:

DF05a/ DF05bConcentration of SVHC in product (% w/w)
DF06a/ DF06b Weight of article
DF07a / DF07b Amount in article

In most cases, sufficient information on CS in articles requires data from many of the 44 data fields described above. This is a remarkable extension of the current information exchange on CS in articles. We discussed the full communication scheme with some stakeholders in order to gain experience on information needs as seen by the actors themselves. In addition we tried to clarify acceptance for proposals to extend the communication.

It was not in the scope of the project to make a detailed survey. We asked the following actors which have experience in Art. 33 communication.

Table 30: Stakeholders which have been asked about extension of Art. 33 communication

Nr.	Institution	Type of actor	Articles / Task	Customers / Activity	Comment
C1	Company 1	AP-FTA, AP-IA	FTA, FA / sealing compounds	Industrial/professional users of interim articles	
C2	Company 2	AP-IA, AP-FA	Complex final articles / kitchen furniture and kitchen equipment	Consumers	
C3	Company 3	AP-FA	Complex final articles / Electronic articles	Consumers	
C4	Company 4	(AP-FA), Retailer	Final articles / Clothes and other textiles for private use	Consumers	
C5	Company 5	(AP-FA), Retailer	Complex final articles / Clothes, household equipment, paper products and many others	Consumers	
C6	Company 6	F	Mixtures	Professional users and consumers / Packaging (e.g. for tubes) can contain candidate substances	
C7	Institution 1	Authority	Art. 33 Enforcement	Chemical industry and downstream users	
C8	Institution 2	Industry association	Support of different sectors	Chemical industry and downstream users	

Stakeholders commented on the following questions:

- Q1a: Does it make sense to communicate more than only presence of CS?
- Q1b: Would you like to receive additional information, e.g. how to handle / dispose articles with CS?
- Q1c: Do you have examples for helpful additional information?
- Q2: Do you know examples in which a CS in an article triggers changes in the operational conditions or additional risk management measures?
- Q3: Do you know examples in which a CS in an article triggers specific requirements for disposal of the article?
- Q4: Do you have positive experience with Art. 33 communication?
- Q5: Do you have recommendations for a harmonised reporting of Art. 33 information?

The answers of the stakeholders are documented (this document has been given to the Federal Environmental Agency).

In the following we summarize the answers.

- **Q1a: Does it make sense to communicate more than only presence of CS? and**

- **Q1b: Would you like to receive additional information, e.g. how to handle / dispose articles with CS?**

The producers of first-time articles and interim articles would like to have more information – if relevant for workers protection, consumer protection or disposal. The same is the case for the local authorities. Additional information could refer to:

- Explanation on consequences due to presence of CS in article: is there a risk related to the specific article? Is it likely that exposure occurs?
- Consequences for processing of interim articles, e.g. during drilling, surface treatment with abrasive measures, development of dust.
- Consequences for maintenance and repair of final articles.
- Release of CS during service life (e.g. phthalates).
- Potential of allergic reactions/ sensitization of consumers due to contact during service life.
- Migration of CS into cleaning agents.
- Release of softeners from plastic parts during treatment of plastic waste.
- Restrictions of recyclability due to presence of CS.

The producers of final articles and retailers, which have been asked, do not want to have more information. They argue that existing legislation already ensures safe articles. They see overflow of information in the supply chains already now. For electronic articles exposure of consumers to CS is considered to be very low.

Two of the stakeholders (AP 2 and retailers) do not accept CS in their products. At present they are able to communicate this requirement to their suppliers and to receive final articles without any CS.

- **Q1c: Do you have examples for helpful additional information?**

The producers AP-IA, AP 2 (of interim articles/ final articles) require exact information on the concentration/ amount of CS in first-time articles. They need this information for calculation of concentration of CS in their articles.

- **Q2: Do you know examples in which a CS in an article triggers additional risk management measures or changes in the operational conditions?**

One example has been given: Requirement to carry gloves to avoid contact with phthalates migrating from plastic compounds (example from AP-IA, AP 2). No further examples are known.

- **Q3: Do you know examples in which a CS in an article triggers specific requirements for disposal of the article?**

The actors involved in the discussions do not know examples.

- **Q4: Do you have positive experience with Art. 33 communication?**

Most of the actors which have been asked consider Art. 33 communication as a necessary and helpful instrument. Especially AP-FTA and AP-IA want to know whether SVHC are contained in the materials and/or articles they receive.

Two retailers of final articles for consumers doubt about the necessity of Art. 33 communication and refer to existing legislation to ensure safety of articles. One of these actors accepts only articles free of CS from his suppliers.

Several actors comment that implementation of Art. 33 communication is insufficient at present:

- In many companies awareness for SVHC in their articles is limited.
- It will need more time to see the importance of this topic.
- In many cases, companies do not get information on CS from their suppliers.

If companies receive information from their suppliers, often they do not understand it. Extension of information exchange without explanation would increase this difficulty.

- **Q5: Do you have recommendations for a harmonised reporting of Art. 33 information?**

A producer of interim articles recommends that existing sector-specific instruments should be used (IMDS from automotive sector). This avoids redundant declarations. At present, IMDS would not allow communication of information on operational conditions and risk management measures.

A producer of final articles for consumers recommended giving specific information to the different recipients: to producers, to customers and for the disposal phase (information on risks and advice on risk management measures).

(One retailer advises that the 0.1% limit should refer to the whole article, not to the homogeneous materials. This discussion is not in the scope of this project).

A producer/ retailer of final articles answered that individual communication (1:1 communication) between supply chains actors should be avoided as far as possible. Article producers should provide article-specific data on CS on their homepage/ internet site for all interested actors (1: all communication). Requested individual communication can be reduced to a reference to this site.

The local authority recommends information on all materials which are relevant for consumers. It could not be excluded that this information would be difficult to understand for the consumers.

Small and medium sized enterprises could be supported by

- Ready-to-use information which CS are expected in the materials which they use;
- Ready-to-use information what consequences arise from the presence of CS in specific materials
- Companies should actively request such information from their suppliers (due to the fact that the information flow is incomplete at present)

For our feasibility study, we draw the following conclusions from the discussions with stakeholders:

- Even minimum communication on CS in articles needs further support (e.g. data fields on exact concentration of CS).
- Proposals to extend the Art. 33 communication should explain the benefits of this extension.
- The consequences of CS in articles regarding the conformity with REACH requirements related to Articles 7.1, 7.2 and 33 should be explained.
- Additional information on operational conditions and on risk management measures is required by several actors.
- Producers of first-time articles and interim articles need other data fields than producers/retailers of final articles. For producers of complex final articles, information on handling during maintenance/repair might be interesting.
- Advice on additional data fields for reporting should refer to existing instruments.
- Individual communication (1:1) should be reduced. This can be realized if information is made available for all interested parties on central sites.
- Companies need information which materials could contain CS.
- Beyond support of reporting, advice would be helpful for companies on active request of information.

13 Conclusions

In work package 1, we analysed current practice of Art. 33 communication. Only the actors of a few sectors are familiar with communication on candidate substances in articles. If communicating at all, the supply chain actors limit the information to the minimum (only the substance name). As shown in Section 12, some actors are interested in obtaining more information on hazardous substances in articles that they would use to ensure safe handling and prevention of risks to workers, consumers and the environment. However, in many cases the sense of this communication is not seen at all by the actors involved.

The analysis of the communication requirements under REACH shows that much more information should be communicated than it is actually the case. This is mainly due to the wording of Art. 33 that information on safe use should be communicated if necessary. Hence, in principle the information should enable the article producers to check, if specific risk management measures are needed to protect workers during processing, use and disposal of articles, to protect consumers during the use of articles and to protect the environment from risks during service life and waste disposal. Due to the generic nature of the registrants' safety assessments it is not fully ensured that there are no risks from hazardous substances in articles. A more in-depth assessment comparing the registrants' safety assessment related to the service-life of articles and the waste stage and a respective assessment of the article producer using specific information instead of assumptions would be helpful to judge on the reliability of the registration information. However, in many cases a safety assessment may not exist, e.g. for all hazardous substances contained in articles which are registered in amounts below 10 t/a.

In order to increase the acceptance and the efficiency of communication on hazardous substances in articles in general and candidate substances in articles under REACH in particular, we suggest the following two proposals:

1. A large part of information required or useful for fulfilling legal obligations and taking responsibility is substance-specific and not article-specific. Therefore, it is possible to make this substance-specific information publicly available for all interested parties. This could lead to a remarkable reduction of information which has to be communicated individually. This proposal is further elaborated in Section 13.1.
2. Different actors need different sets of information packages. We propose a modular communication to help to focus the information exchange on the relevant items. This proposal is further described in Section 13.2 and in the guidance document

13.1 Proposal for data fields for a substance profile

Of the proposed data fields for communication, several are substance-specific, i.e. do not address or depend on the substance use. This information could be included in short "substance profiles" and made available as central reference document to all actors. If that were the case, this information could be excluded from the supply chain communication on hazardous substances in articles by making reference to this document.

Substance profiles could be generated for each candidate substance[46] based on the information from registrations stored in ECHA's database of registered substances. However, this information would have to be processed (e.g. decision on which PNEC to use if more than one is published) and some information may not be available (e.g. waste codes).

The following tables list all data fields of the "comprehensive data set". The grey shaded cells indicate, which information could be contained in these substance profiles and would hence not be communicated along the supply chain but still available.

Table 31: Data fields related to information that is directly or indirectly required under REACH Article 33

Data field	Comment
DF01 Substance name	Provided in/by SDS of M/I and F
DF02a Registration number	
DF02b EINECS number	
DF02c CAS number	
DF03a Product name	"article" may mean first-time, interim or final article depending on the actor filling the data field; therefore information content differs depending on the actor providing information.
DF04 Intended final article	
DF06a/b Weight of article	
DF07a/b Amount in article	
DF08a/b Concentration in article (% w/w)	

Remark: The registration number (data field CS2/B2) could be part of the individual communication. It is not publicly available.

Table 32: Data fields required to check whether use has been registered

Data field	Comment

[46] This substance profile could also be generated for other hazardous substances with relevance for articles; however it is useful to start with the candidate substances.

DF10 Substance function	Voluntary information of any actor
DF11 Registered AC	Provided in ECHA's database of registered substances Information only needed to check, if substance has been registered.
DF12 Registered PROC	
DF13 Registered PC	
DF14 Registered SU	
DF15 Use registered	The result of a check whether the substance is registered for the use may be communicated but is not part of ECHA's database of registered substances

Table 33: Data fields related to hazardous properties (checking if information on safe use is required)

Data field	Comment
DF20 Classification CMR	Provided in ECHA's database of registered substances Information needed to check, whether information on safe use are needed and / or to make own assessments on risks for workers, consumers or the environment as part of employers' obligations or for taking product responsibility
DF21 Hazardous by inhalation	
DF22 Hazardous by ingestion	
DF23 Hazardous by dermal contact	
DF24a DNEL/DMEL workers inhalation	
DF24b DNEL/DMEL workers dermal	
DF25a DNEL/DMEL consumers inhalation	
DF25b DNEL/DMEL consumers oral	
DF25c DNEL/DMEL consumers dermal	
DF30 Environmental classification	
DF31PBT/vPvB	
DF32 SVHC properties acc. to Art. 57(f)	
DF33a PNEC aquatic	
DF33b PNEC soil	

Table 34: Data fields related to the inclusion of the SVHC in the article

Data field	Comment
DF40 Containment of SVHC in article	Generic information may be in ECHA's database of registered substances, could be refined in the supply chain by formulators or article producers
DF41 Inclusion in matrix	
DF42 Part of article SVHC is included in	
DF43 Migration / diffusion rate	

Information on inclusion in matrix (CS 25) and migration rates (CS26) are often article-specific. However, it might be that for main uses these data are known. In these cases, generic information could be part of a substance profile. Article-specific adaptations of this generic information could be made from the article producers. The same might be the case for the conditions of use and the risk management measures for the main uses.

Table 35: Data fields on physico-chemical properties

Data field	Comment
DF50 Vapour pressure	Provided in ECHA's database of registered substances Information needed to estimate potential releases of substances from the articles as part of risk assessments or for checking if information on safe use is necessary.
DF51 Water solubility	
DF52 Log Kow	
DF53 Persistence	

Table 36: Data fields related to the conditions of use

Data field	Comment
DF60 OCs on dust formation	The information may be generated by the registrants and forwarded along the supply chain; however this may be very generic information.
DF61 OCs on emissions to workplace air	
DF62 OCs on dermal contact of workers	

DF63 OCs release to water	It is expected that the information on the conditions of use is generated along the supply chain by the article producers when checking whether or not there may be certain risks and / or how they could be avoided. The closer the actor to the final article, the more specific the information can be.
DF64 CoU inhalation consumer	
DF65 CoU ingestion consumer	
DF66 CoU dermal consumer	
DF67 CoU environment	

Table 37: Data fields related to RMMs

Data field	Comment
DF70 RMMs release to (workplace) air	c.f. comment on OCs / CoU
DF71 RMMs release to air	
DF72 RMMs dermal contact	
DF73 RMMs release to water	

Table 38: Data fields related to the waste stage of the article

Data field	Comment
80 Hazardous waste	Classification according to waste legislation
81 Waste code in the list of waste	Waste code may depend on article type
82 OCs on workplace air from waste	Derived from companies' assessments
83 OCs on dermal contact from waste	
84 OCs release to water from waste	
85 RMMs release to (workplace) air from waste	
86 RMMs dermal contact from waste	
87 RMMs release to water from waste	
88 Treatment technologies to avoid	Derived from substance info; could be communicated from registrant
89 Specific waste collection schemes	Depends also on types of articles

Of the comprehensive data sent, several fields can be included as "final" information in substance profiles. For other data fields, generic information may be available from registrations, e.g. based on the main materials a substance is included into or on the main uses of a substance. This information may be refined or specified by the supply chain communication based on more concrete information of the use.

If possibilities for central reference documents are used, communication in the supply chains could be reduced to the data fields which are specific to the article or the use. The information and data fields that would be communicated with the articles in specific supply chain communication (depending on the need of the actors and their role in the supply chain) are indicated in Table 39.

Table 39: Article-specific data fields

Information directly or indirectly required under REACH	
DF03a Product name	Particularly relevant for complex articles (location of substance)
DF04 Intended final article	May not be relevant in many cases
DF08a/b Concentration in article (% w/w)	Important if article producers supply article producers (Art. 7(2))
DF06a/b Weight of article	
DF07a/b Amount in article	
Information to check whether use has been registered	
DF15 Use registered	Requires more information than use descriptors, information to be generated by APs
DF10 Substance function	
Information related to hazardous properties	No article specific data required
Information to check if information on safe use is required	
DF40 Containment of SVHC in article	Generic information may be contained in substance profile but

DF41 Inclusion in matrix	article producers should / may refine based on more specific use information. Necessary to fulfil employers obligations and take producer responsibility (assessment of potential risks – exposure)
DF42 Location in the article	
DF43 Migration / diffusion rate	
DF60-67 Conditions of use during processing and service-life	
DF70-74 RMMs during processing	
Information on safe disposal	
DF 80 Hazardous waste	This information should be generated in the registration but is not available in ECHA's database of registered substances. Specific recommendations may be closely related to the article produced (e.g. electronic equipment)
DF81 Waste code in the list of waste	
DF82-89 Information on article wastes, conditions of use and RMMs during waste treatment and technologies to avoid.	
CS40/D2 Treatment technologies to avoid	

The article-specific information does not have to be communicated to individual customers in a 1:1 communication. They can be made available to all customers from the company on the company´s website.

13.2 Modular communication: from minimum communication to sufficient information

Current practice of Art. 33 communication can be characterized as "minimum communication". It consists of the message, that a specific article contains one or several candidate substances in a concentration above 0.1%. A sufficient communication should supply the customer with the information he needs for an adequate use of the article. (In addition, Art. 33 communication supports the substitution of CS by less problematic alternative solutions. However and unfortunately, this isn't accepted as a benefit by several actors).

We propose in the following a set of options for extending communication beyond providing the name of the candidate substances. These options aim to support the necessary steps from "minimum communication" to "sufficient communication". In total, they address all data fields for comprehensive communication as described in Section 8. However, information items are grouped and presented as information package that address specific situations or information needs. This increases the attractiveness of the communication and should increase the understanding and acceptance of related communication by showing that targeted communication on CS gives valuable information.

We identify the following "modules" as most relevant for communication on hazardous substances in articles. Details on when the communication modules should be applied and which specific data fields belong to a communication module are provided in the guidance.

Table 40: Proposed communication modules

Nr.	Name of module	Content enables
Comp	**Comp**liance	**Checking if 0.1% concentration is exceeded; communication of legal minimum (name)**
		Substance identity
		Products
		Amounts
Loc	Al**loc**ation of SVHC	**Identify specific article part SVHC is contained in**
		Substance identity
		Products
		Location in the article
P-O	**P**hase **o**ut	**Understanding conditions, limitations and opportunities for substitution of SVHC**
		Substance function
		Location in the article
RU	**R**egistered **u**se	**Check if a use has been registered**
		Registered use descriptors
PWD	**P**rocessing **W**orkers **D**ust	**Check risk of dust inhalation and communicate OCs/RMMs**
		Substance identity
		Amounts
		Human health hazards (inhalation)
		Location in the article
		Operational conditions workers dust
		Risk management measures workers dust
PWE	**P**rocessing **W**orkers **E**vaporation	**Check risks of inhalation of vapours and communicate OCs/RMMs**
		Substance identity
		Amounts
		Human health hazards (inhalation)
		Location in the article
		Release information
		Operational conditions workers evaporation
		RMMs workers evaporation
PWS	**P**rocessing **W**orkers **S**kin	**Check risks of dermal contact and communicate OCs/RMMs**
		Substance identity
		Amounts
		Human health hazards (dermal)
		Location in the article
		Release information
		Operational conditions workers evaporation
		Risk management measures workers dermal
PEW	**P**rocessing **E**nvironment **W**ater	**Safe handling of article during processing regarding emissions to water**
		Substance identity
		Amounts
		Environmental hazards
		Location in the article
		Release and fate information
		Operational conditions environment water
		RMMs environment water
PEA	**P**rocessing **E**nvironment **A**ir	**Safe handling of article during processing regarding emissions to air**
		Substance identity
		Amounts
		Environmental hazards

Nr.	Name of module	Content enables
		Location in the article
		Release and fate information
		Operational conditions environment air
		RMMs environment, air
SCI	**S**ervice-life **C**onsumers **I**nhalation	**Check risks for consumers via inhalation**
		Substance identity
		Amounts
		Human health hazards (inhalation)
		Location in the article
		Release information
		OCs consumers evaporation
SCO	**S**ervice-life **C**onsumers **O**ral	**Check oral risks for consumers**
		Substance identity
		Amounts
		Human health hazards (oral)
		Location in the article
		Release information
		Operational conditions consumers ingestion
SCD	**S**ervice-life **C**onsumers **D**ermal	**Check dermal risks for consumers**
		Substance identity
		Amount
		Human health hazards (dermal)
		Location in the article
		Release information
		Operational conditions consumers dermal
SEW	**S**ervice-life **E**nvironment **W**ater	**Conditions, under which the article can be used without risk to the environment during service life**
		Substance identity
		Amounts
		Environmental hazards
		Location in the article
		Release and fate information
		Operational conditions environment
WW	**W**aste **W**orkers	**Check workers health risks from handling hazardous wastes**
		Substance identity
		Amounts
		Waste information
		Human health hazards (inhalation & dermal)
		Location in the article
		Release information
		Operational conditions workers waste
		Risk management measures workers, waste
WE	**W**aste **E**nvironment	**Check environmental risks from waste processing**
		Substance identity
		Amounts
		Waste information
		Environmental hazards
		Location in the article
		Release and fate information
		Operational conditions environment waste
		RMMs environment, waste

Nr.	Name of module	Content enables
WC	**W**aste **C**onsumers	**Provide information to consumers on how to dispose of the article**
		Substance identity
		Waste information
		Specific waste disposal

14 Literature

Canada 2011; Proposed Risk Management Approach for hexabromocyclododecane. Environment Canada, Health Canada, November 2011.

COWI 2011; Alternatives to the use of flame retarded EPS in Buildings. Climate and Pollution Agency, Oslo, 2011

ECHA 2008; Member State Committee, Support document for identification of hexabromocyclododecane and all major diastereoisomeres identified as a substance of very high concern. Adopted on 8 October 2008. Helsinki 2008.

ECHA 2009; Background document for hexabromocyclododecane and all major diastereoisomeres identified (HBCDD). 1 June 2009. Helsinki 2009.

ECHA 2010; Committee for risk assessment, RAC. Opinion proposing harmonized classification and labelling at Community level of hexabromocyclododecane (HBCDD). Adopted 8 December 2010. Helsinki 2010.

IOM 2009; Data on manufacture, import, export, uses and releases of HBCDD as well as information on potential alternatives to its use. IOM consulting, Helsinki 2009

Kogg, B.; Thidell, A. (2010): Chemicals in products. An overview of systems for providing information regarding chemicals in products and of stakeholders´needs for such information. UNEP, 2010.

Massey, R.; Hutchins, J.; Becker, M.; Tickner, J. (2008): Toxic substances in articles: need for information. TemaNord, Nordic Council of Ministers, 2008.

UNEP CIP 2011: A synthesis of findings under the UNEP-led project on information on chemicals in products. UNEP, February 2011.

R&D Project “Analysis of implementation of requirements of REACH Article 7 related to imported articles”, Ökopol, FKZ 3707 67 4005.

R&D Project “Interfaces between REACH and other article-related substance regulations”, Öko-Institute, FKZ 206 67 460/04.

Annex 1

Guidance on Communication on Substances in Articles

Annex 2

Examples of Communication on Substances in Articles