REGULATORY RISK ASSESSMENT: Trends and paradigm shifts are needed

Kees van Leeuwen & Steven Bradbury
(European Commission & USEPA)

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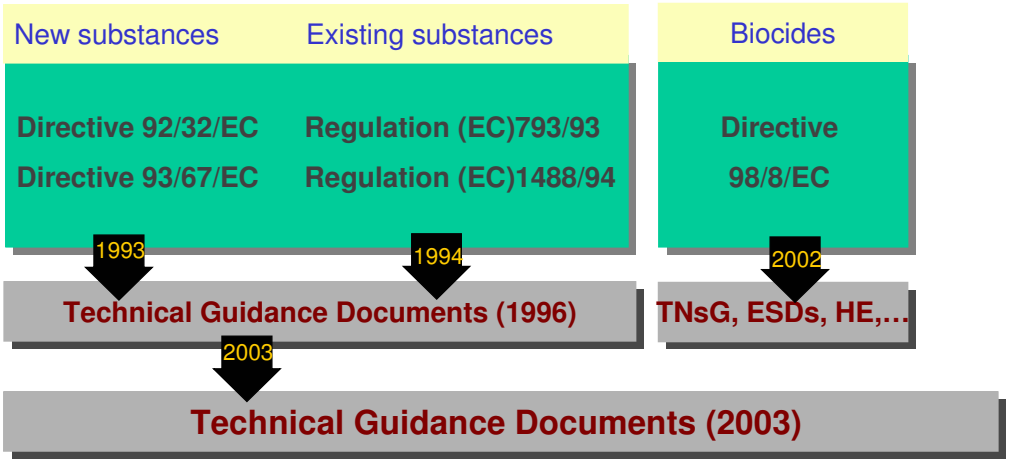
Current legislative context



Principles for risk assessment

Detailed procedures for risk assessment are given in the Technical Guidance Documents (TGD):

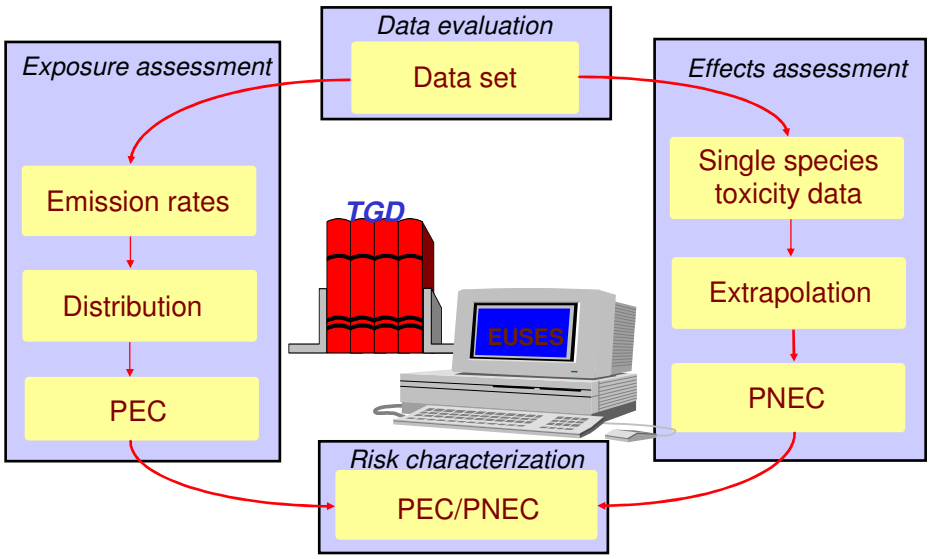
- man
- environment
- QSARs
- emission scenario documents

2nd edition of the Technical Guidance Document (TGD) on Risk Assessment of Chemical Substances following European Regulations and Directives

Freely available from ECB web page

http://ecb.jrc.it/tgdoc

Basic framework of risk assessment process

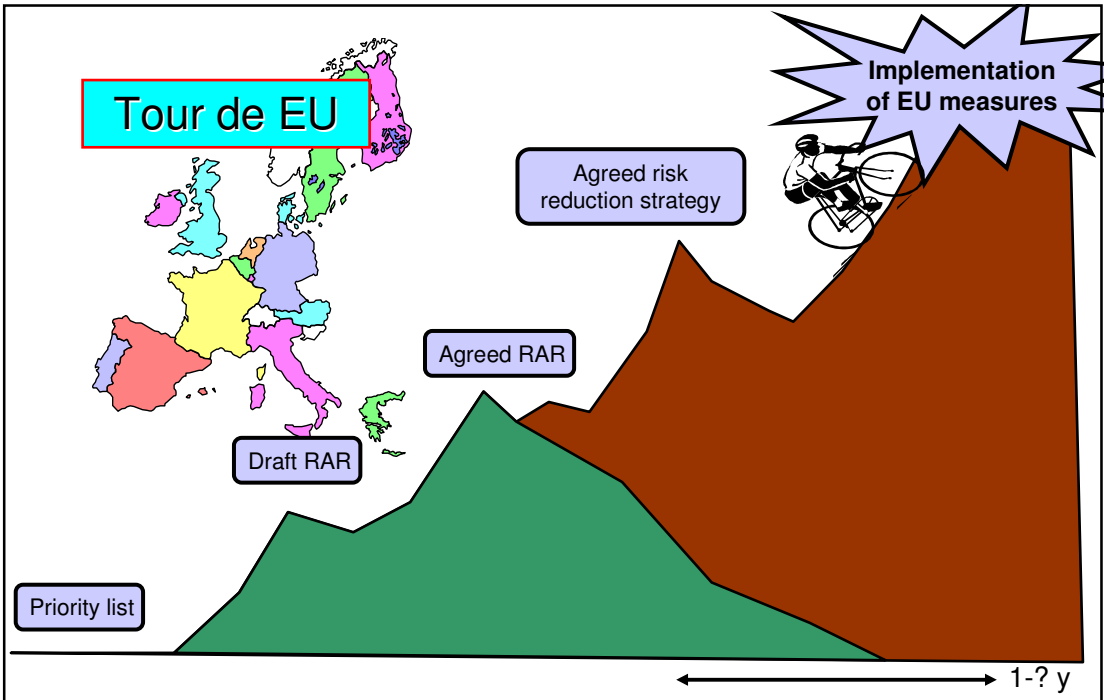


Main successes of current legislation

- ❑MS-process & industry involvement
- ❑Agreement on RA principles (TGD/EUSES)
- ❑Agreement on priority setting (EURAM/HERO)
- ❑Large data gathering and summarising process
- ❑Process is/was at steam

Main problems

- New chemicals: administrative burden is growing
- Shift in resource allocation: focus on existing chemicals
- Integration is needed. We face a myriad of directives and regulations. The system is inefficient
- Data gaps: 86% of HPVCs have less than base set data
- The process takes (too much) time
- Burden of proof on public authorities
- Lack of incentives for innovation



SETAC BRIGHTON CONFERENCE JdB, BH, KvL

Lessons learned (process)

- ❑ Regulatory framework essential. We need also targets/ deadlines/ allocation of responsibilities/capacity in MSs, IND & COM
- ❑ Legislation is important but implementation is key!
- ❑ After publication in the OJ the work starts!
- ❑ Implementation (quality and acceptance) takes time
  1. Develop and apply methodologies
  2. Build trust and reach agreement
  3. Learn the language

II. REACH: KEY ELEMENTS

- Introduces a Single Coherent System for new (non phase-in) and existing (phase-in) substances
- Key elements:
  - Registration by industry of manufactured/imported chemical substances > 1 tonne/year (staggered dead-lines over 11years)
  - Increased information and communication throughout the supply chain
  - Evaluation of some registered substances (Member States)
  - Authorisation only for use of substances of very high concern
  - Restrictions: "Safety net" (Community wide action)
  - Chemicals Agency to efficiently manage the system

A tiered approach & focus on priorities:

- High volumes (chemicals with greatest likely exposure register first)
- Greatest concern (Carcinogenic, Mutagenic and Reprotoxic register first)

CORE TOOLS UNDER REACH

- The Chemical Safety Assessment (CSA) is the tool used to ***determine***
- The Chemical Safety Report (CSR) is the tool used to ***record/document***
- The Safety Data Sheet (SDS) is the tool used to ***communicate***

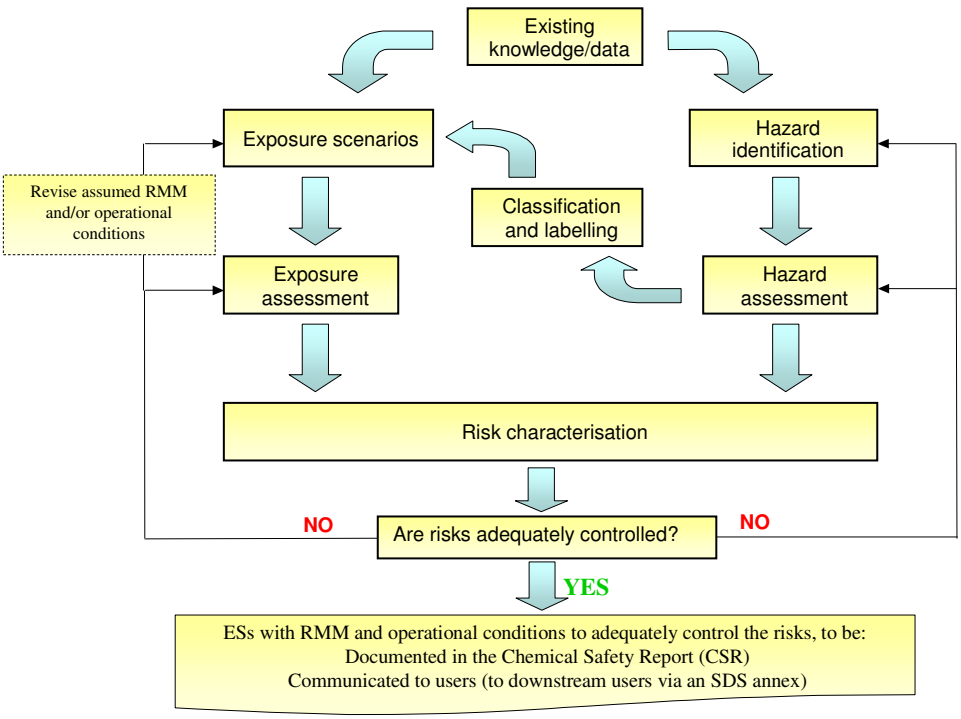
III. IMPLEMENTATION CHALLENGES AHEAD

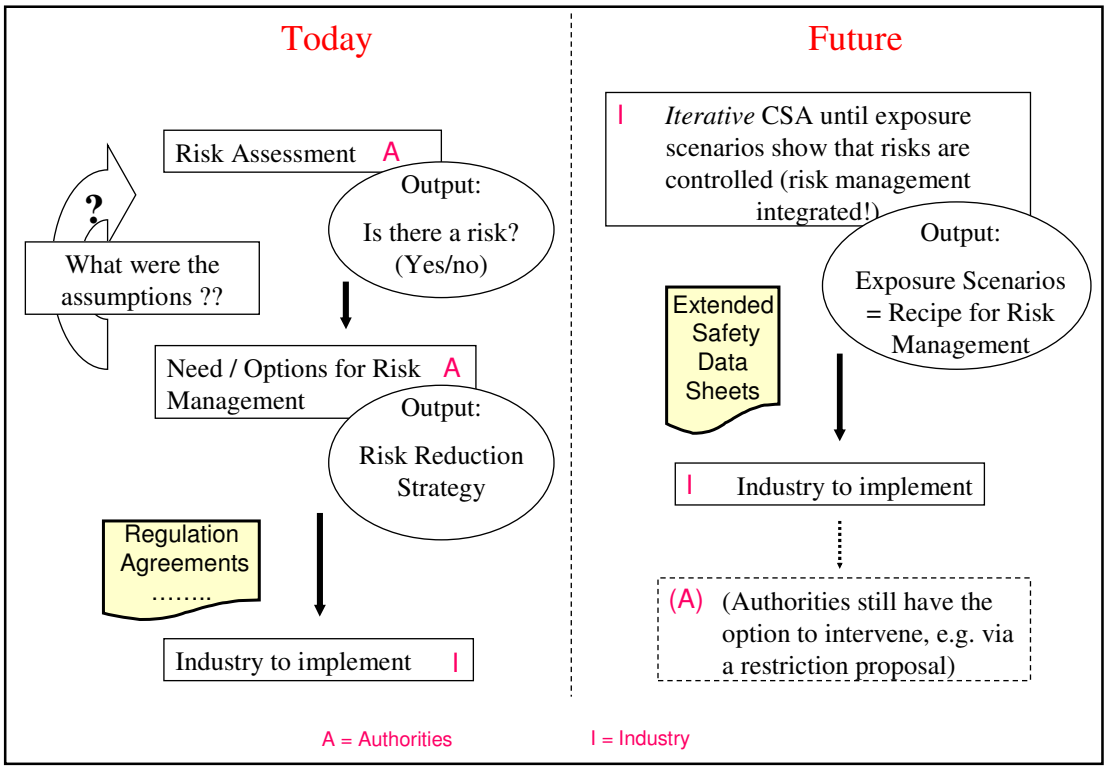
1) Focus on exposure/risk management

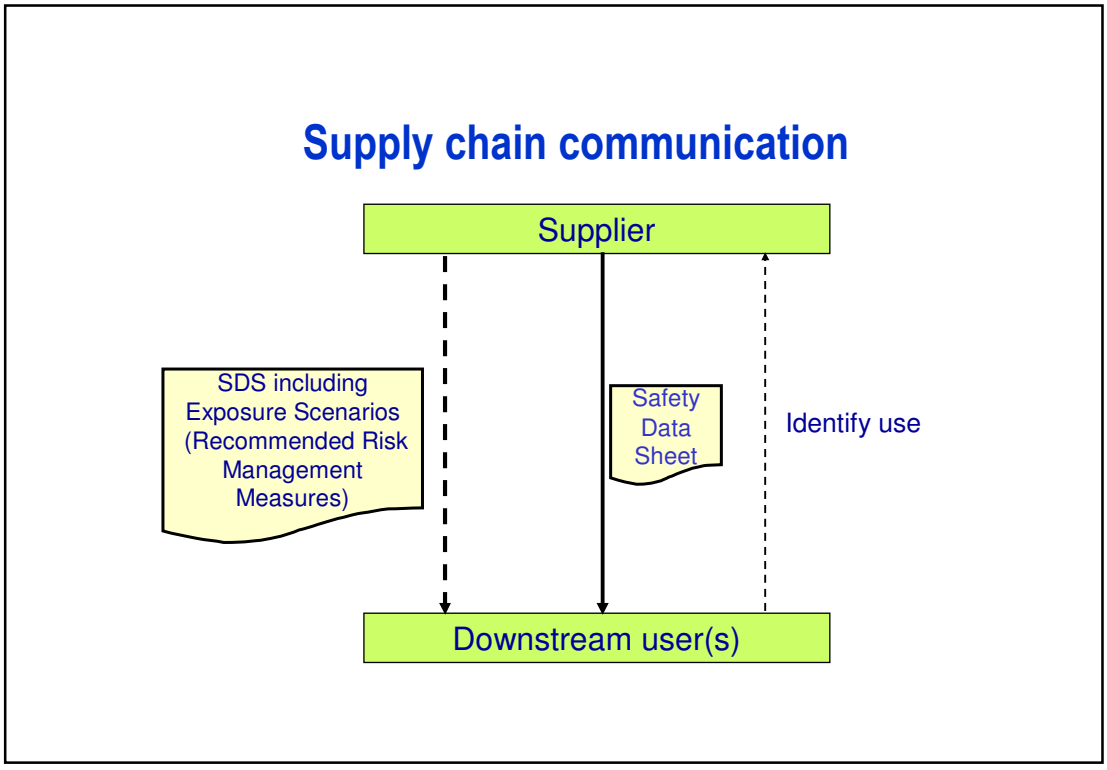
2) Intelligent testing strategies (ITS)

CORE TOOLS UNDER REACH

- The Chemical Safety Assessment (CSA) is the tool used to determine the way chemicals can be used safely
- An **exposure scenario** sets out, for a given use, how the substance can be used in a way that risks are adequately controlled by describing the conditions for use:
  - Process descriptions (incl. quantity used)
  - Operational conditions (incl. frequency and duration of specified operations)
  - Risk management measures (process and emission control, personal protective equipment, good hygiene, etc.)




Today
Future
Risk Assessment A
Output:
Is there a risk?
(Yes/no)
What were the assumptions ??
Need / Options for Risk Management A
Output:
Risk Reduction Strategy
Regulation Agreements ……..
Industry to implement I
I Iterative CSA until exposure scenarios show that risks are controlled (risk management integrated!)
Output:
Exposure Scenarios = Recipe for Risk Management
Extended Safety Data Sheets
I Industry to implement
(A) (Authorities still have the option to intervene, e.g. via a restriction proposal)
A = Authorities
I = Industry


Supply chain communication
Supplier
SDS including Exposure Scenarios (Recommended Risk Management Measures)
Safety Data Sheet
Identify use
Downstream user(s)

Implementation Challenge 1: Conclusions

1. RMMs are the start of a RA. The focus is on exposure
2. It requires multidisciplinary and integrative thinking & expertise right from the start
3. Dialogue up and down the supply chain between actors in the supply chain is key to success!
4. It requires paradigm shifts:
   - effects-based → exposure-driven
   - risk assessment → risk management
5. It requires detailed information on use and exposure of substances (in products) which is generally not available to the authorities (Haigh and Bailly, 1992!)
6. Expertise in and outside industry is scarce (aging population)

III. IMPLEMENTATION CHALLENGES AHEAD

1) Focus on exposure/risk management

2) Intelligent testing strategies (ITS)

Intelligent Testing Strategies (ITS)

The most efficient way to carry out hazard and risk assessments of large numbers of chemicals, while reducing costs to industry and minimising animal testing, is to obtain the necessary information by means of intelligent testing strategies (ITS).

Intelligent testing strategies are integrated approaches comprising of multiple elements aimed at speeding up the risk assessment process while reducing costs and animal tests

(Bradbury, Feytel and Van Leeuwen, 2004)

Public Availability of Data on HPVCs
(Allanou, Hansen and van Der Bilt, 1999)

- 14 %:base set data
- 65%: less than base set
- 21%: no data

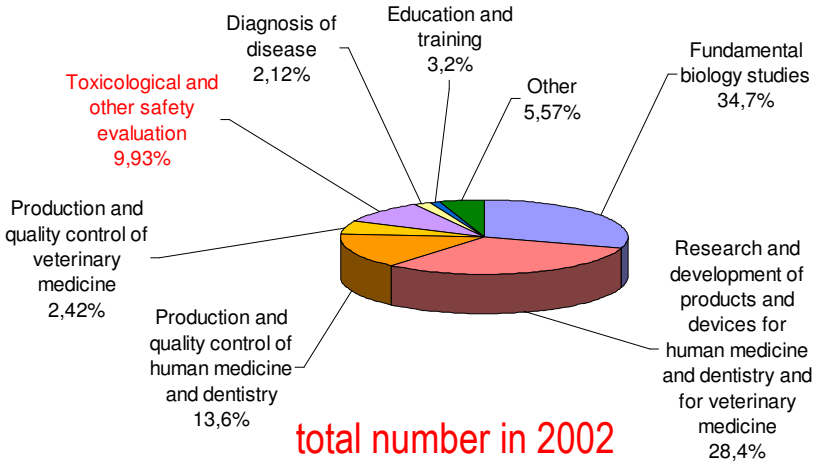
86%

REACH and the use of test animals

- Testing on vertebrate animals shall be undertaken only as a last resort (art. 23)
- Information may be generated by other means than tests, in particular through (Q)SARs and read-across (art 12)

⇒ Legislative text + guidance should limit use of animals and prevent box-ticking

Purposes of animal experiments in 2002
COM(2005) 7 final



total number in 2002 = 10.7 million

Purposes of animal experiments in 2002
COM(2005) 7 final

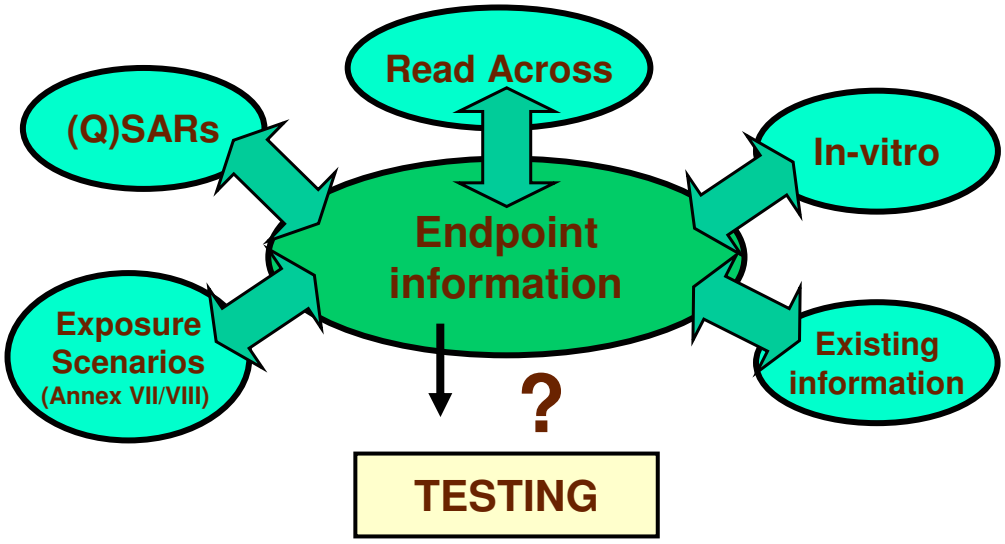
Total number	10,700,000	100 %
Safety evaluations	1,060,000	10 %
Agricultural chemicals	123, 000	1 %
Industrial chemicals	136,000	1%
Cosmetics	2,700	0.025%

REACH: saving potential of ITS
(Van der Jagt et al., 2004; EUR report 21405)

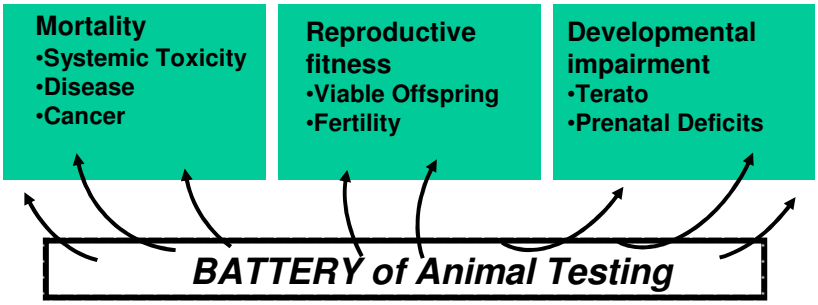
- **Testing costs:** **€ 800-1130 million**
- **Number of animals:** **1.3-1.9 million**

The most likely scenario for REACH according to the JRC: 2.6 million vertebrate animals and € 1.5 billion for testing (http://ecb.jrc.it/ **)**

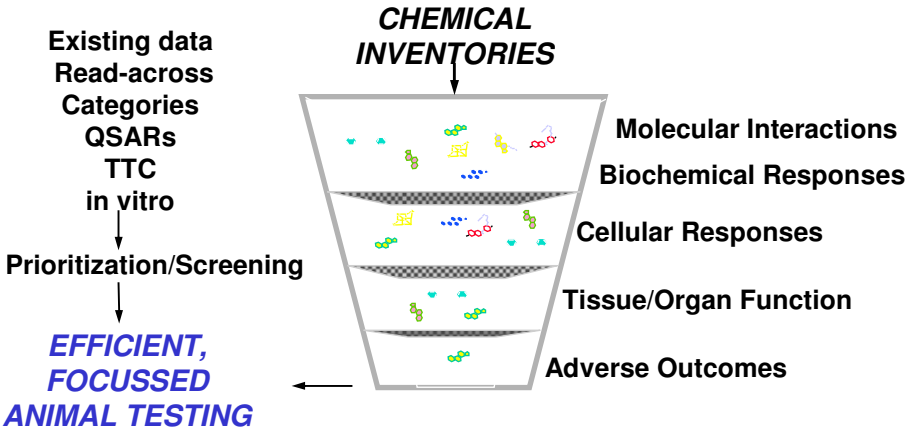
Intelligent Testing Strategies (ITS)



Current toxicology testing paradigm generates *in vivo* animal data for all possible outcomes to determine which of all possible effects are relevant



(Jones and Bradbury, USEPA, 2005)



(Jones and Bradbury, USEPA, 2005)

A paradigm shift is needed

In the context of regulatory programs, the challenge is to move in a scientifically credible and transparent manner from a paradigm that requires extensive hazard testing to one in which a hypothesis- and risk-driven approach can be used to identify the most relevant *in vivo* information

(Bradbury, Feytel and Van Leeuwen, 2004)

Components of Intelligent Testing Strategies

(v) Read-across and chemical categories (USEPA, 2004)

	Human health	Environmental effects
Adequate studies	50%	58%
Estimation via read-across	44%	35%
Testing	**6%**	**7%**

Towards a 7-R strategy implementing ITS

1. ***Risks*** Focus on risks (include **exposure**)
2. ***Repetitive*** A tiered approach should be applied, going from simple, to refined or comprehensive, if necessary, to quickly assess chemicals of low concern and to prevent animal testing.
3. ***Relatives*** The focus should be on families or categories of chemicals (a group-wise approach) using read-across, QSARs and exposure categories: move away from the chemical-by-chemical approach.
4. ***Restriction*** of testing (waiving of testing) where possible and carry out *in-vivo* testing where needed in order to prevent damage to human health and/or the environment. The strategy should also encompass the current 3-R strategy of:
5. ***Replacement*** (substitution)
6. ***Refinement*** (reduce suffering and distress)
7. ***Reduction***

Implementation Challenge 2: Conclusions

1. ITS is on the political agenda, partnerships with industry have been set up
2. ITS has a great animal-saving and cost-saving potential
3. Expectations to replace animal tests seem to be running ahead of scientific reality (CSTEE & SCCNFP, 2004 and Greim et al. 2006)
4. A paradigm shift is needed from extensive animal testing to efficient, focussed animal testing applying the 7-R approach
5. Further scientific work (2007 onwards) and regulatory implementation is needed.

→ ITS has just started! Industry involvement is key

IV. CONCLUDING REMARKS: Trends and paradigm shifts are needed

1. From focus on legislation to implementation
2. From public authorities to industry (burden of proof)
3. From reactive to proactive (attitude)
4. From full testing to selective testing (ITS 7-R)
5. From effects-oriented to exposure-driven
6. From focus on RA to RMM
7. From short-term to long-term commitment

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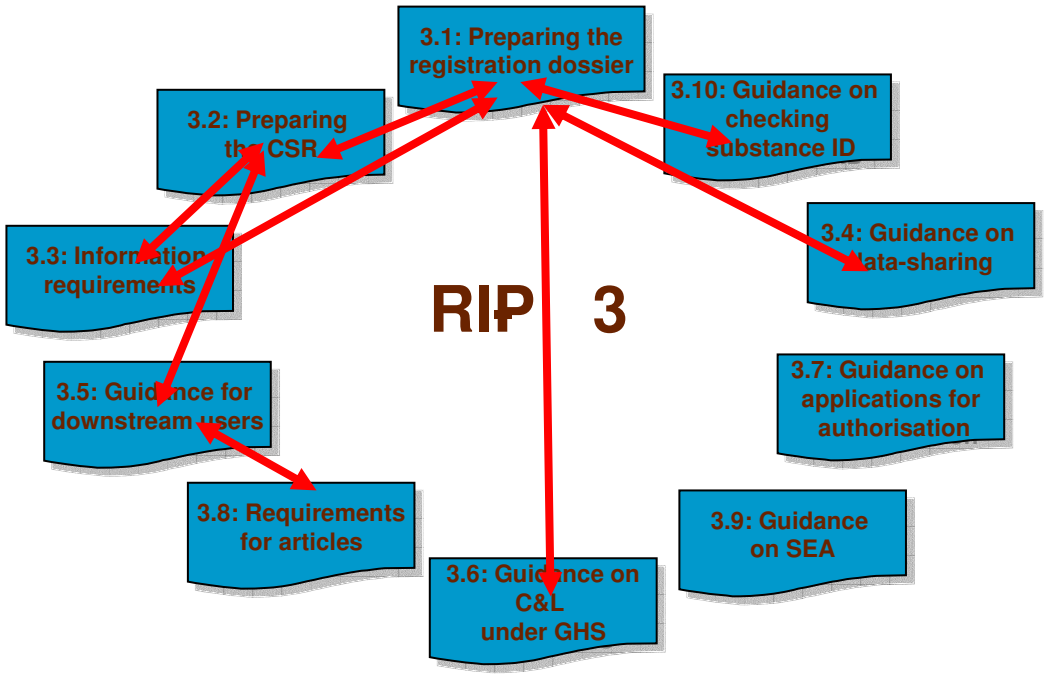
Preparations for REACH Implementation

REACH Implementation Projects (RIPs):

- RIP 1: Process descriptions
- RIP 2: Development of IT systems (IUCLID database and REACH-IT)
- RIP 3/4: Guidance Documents industry/authorities
- RIP 5/6: Setting up the (pre-)Agency

AIM: In close collaboration with all stakeholders develop guidance to help fulfil the obligations under REACH



RIP 3.3: Guidance on Information Requirements

- Objective: Guidance for industry on how they can fulfil the REACH information requirements on intrinsic properties (Annex IV to IX)
- Carried out by a consortium of Industry (CEFIC, ECETOC), COM and key MS authorities with broad stakeholder expert consultation

Further information on RIPs

http://ecb.jrc.it/REACH/