The European Partnership for Alternative Approaches to Animal Testing

2007 Progress Report

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Contents

Foreword

We are pleased to present the Second Progress Report of the European Partnership for Alternatives Approaches to Animal Testing.

The EPAA was created at the end of 2005. In 2006 it adopted an Action Plan and established the necessary working groups. This year, 2007 was the first in which the EPAA focused exclusively on the implementation of the Action Plan. We believe that progress has been made on all actions announced and this is reflected in the report..

The 2006 Conference identified regulatory acceptance as a priority for 2007. A workshop organised in June 2007 was a first attempt to understand sector specific criteria for acceptance within a given regulatory framework. Based on case studies, participants identified barriers and possible way forward for overcoming them in various sectors, and this year's Conference allows stakeholders at large to examine how further progress can be made in this field.

More than ever, it is important to understand ad promote the concept of the 3Rs in a regulatory context. We are also aware that the EPAA creates high expectations and recognise the need to accurately describe the contribution that the EPAA can make in terms of its remit and objectives, its potential and limits and its place in the wider landscape. In particular the acceptance of alternatives by European regulators and their counterparts in other countries is necessarily a carefully considered process that takes time.

In presenting this report, we would like to thank all those colleagues from industry, the European Commission, representatives from stakeholders, the members of the Mirror Group for the valuable contribution they have given throughout the year.

Georgette Lalis
European Comission
DG Entreprise & Industry

Charles Laroche
Unilever

The European Partnership
for Alternative Approaches to Animal Testing

EPAA 2007 progress report

Executive summary

This reports details EPAA activities in the first year of the partnership following adoption of the action programme. Progress is reported across all of the actions areas including:

- Establishment of databases on industry in-house use of alternatives and research projects;
- Developing an understanding of the importance and nature of successful models of dissemination practices;
- Prioritisation and initiation of research efforts on reproductive toxicity;
- Evaluation of the utility of metrics detailing the uptake of 3Rs in regulatory testing;
- Identification of barriers to the uptake of the 3Rs;
- Understanding drivers for regulatory testing;
- Facilitation of the validation process &
- Understanding and promoting regulatory acceptance and implementation.

The latter point relating to regulatory acceptance was the priority theme for the EPAA in 2007 and a model to facilitate future progress has been identified.

The EPAA has been active in outreach and interaction with stakeholders via the Mirror group and directly with the likes of the European Parliament and Scientific Committee for Consumer Products (SCCP). With numerous presentations at the World Congress on Alternatives and Animal Use in the Life Sciences, the EPAA is also making its presence felt on the global stage. Priority activities for the partnership in 2008 have been identified and include a high level workshop on changing the paradigm of safety testing, exploration of opportunities to promote the 3Rs in the food sector and promotion of acceptance of validated methods.

Introduction

Activities of the EPAA cover five main themes, which are interdependent and constitute a balanced and coherent initiative towards alternative approaches to animal testing: These five themes include:

- Mapping of past and current 3R activities to better inform the planning and prioritisation of subsequent actions
- Prioritisation, promotion and implementation of future research based on the application of the 3Rs
- Identification, dissemination and implementation of best practice in the use of the 3Rs
- Implementation of the 3Rs in regulation and decision making
- Validation and acceptance based on the 3Rs

Different activities undertaken under the various action strands are described below.

Database of 3Rs methods and ongoing research

Until the creation of EPAA, different sectors worked on 3Rs in isolation. It was therefore not clear which methods could be transferred or reapplied within and between sectors. Results from current 3R research activities need to be identified and consolidated in order to better inform the planning and prioritisation of future research

For the first time, seven major manufacturing sectors – chemicals, cosmetics, pharmaceuticals, bio-industries, crop protection, animal health, and soaps and detergents – have joined forces to develop mutual trust and share their experience in devising new approaches to safety testing based on the 3Rs. Companies working in these disparate sectors undoubtedly have much to share and there is now a real opportunity for them to learn from each other.

In order to facilitate this process, the EPAA has drawn up an inventory of alternative tests and other approaches employed by companies in decision-making processes related to product safety evaluation. A database for end-users is now made available through the EPAA website as a tool to share information on alternative approaches and identify those with potential for transfer and reapplication within and between sectors.

The Partnership is the main forum currently attempting to gain a comprehensive overview of the state of play of ongoing 3Rs research in the EU. The EPAA has established a database of ongoing research projects with potential to deliver on the 3Rs. This will greatly facilitate the identification of gaps in research needs and is intended to inform future research prioritisation. For the first time it will make possible to coordinate and make complementary the research initiatives supported by the EPAA companies, sectors and the Commission.

Both databases are accessible via a dedicated website (http://www.epaawg1.com). Registration as a user and contribution to the database grants access to the questionnaires and the summary reports available. The public will be regularly informed through the EPAA website about the number and scope of the entries (i.e., the R they relate to, their application etc).

Reference documents:
http://www.epaawg1.com

Effective dissemination of 3Rs information

A very large number of organisations have a role in promoting the 3Rs at different levels in Europe, yet it is evident that the promotion, dissemination, and implementation of the 3Rs could be improved. The activities of the many different organisations appear to be fragmented, with different remits, scope, funding and level of impact.

In 2006 EPAA addressed the question of who is disseminating 3Rs organizations, and mapped 3Rs organisations, their roles and remits. This list is now available on the EPAA website and will be regularly updated upon application from relevant organizations.

In 2007 EPAA looked at how dissemination takes place and focused on the dissemination practices to identify the most successful strategies.

In depth interviews with a number of 3Rs organizations identified some factors critical for success. These were followed up in a workshop that took place on 1 and 2 October 2007 in Lyon and were developed by illustration of case studies involving successful 3Rs methods:

1. Science driven approach; evidence based, peer reviewed publications and methods
2. Clear focus on specific key areas, realistic tiered strategy
3. Availability of a champion, i.e. someone in a position to push and promote the new method and to provide post validation support and follow up during implementation
4. Government policy i.e., long term support and funding to 3Rs
5. Level of societal concern; high level of concern promotes 3Rs
6. Tangible benefit to those required making the change in current practice
7. Good communication tools e.g., user friendly website, newsletters
8. Metrics/Key Performance Indicators/visible output helps, e.g., monitoring of currently used tests and new methods, animal number statistics

The output of the workshop will be used to prepare general recommendations, which would be published in a scientific journal.

The EPAA has shown that dissemination of information on 3Rs therefore has a direct impact on moving 3Rs methods from R&D to validation, acceptance and implementation.

The main conclusions from the workshop are as follows:

There is probably sufficient awareness about the need for the 3Rs (due to societal pressure, legislative pressure and industry requirements). There are many opportunities for gaining funding for research. There are plenty of organizations to provide information on the 3Rs, although these tend to work in isolation. A point raised during the workshop was that the Commission may have a role to play in ensuring information on all alternative/3Rs projects funded by individual Directorates General is co-ordinated and available in one place as it is currently difficult to trace these 3Rs projects through other means. There is a process and money for validation. All of this supports research from basic science through to test development and then to validation and will continue to require funding and support.

However, the workshop identified a gap. This was the absence of a process and/or organisation/institution for post validation implementation support and dissemination of new methods that would ensure the uptake of new methods is both rapid and widespread after validation.

The case studies have clearly illustrated that what has been achieved so far is due largely to the resource and perseverance of personal champions. This is not an efficient way forward for the future. They also illustrated that long-term investment in 3Rs is crucial to support 3Rs methods (e.g. in all three case studies the timescale from basic scientific concept to validated method was about 15 years). This not only comprises investment in research, but also in dissemination activities at various stages from research to validation, regulatory acceptance and implementation.

Since dissemination plays an important role during the post-validation/implementation phase and for regulatory acceptance, EPAA will seek synergy between the dissemination and validation and acceptance work strands and make sure that regulatory authorities are consulted.

Reference documents:
List of 3Rs organizations
Report from WG3 workshop

Research: from re-applications to shifting paradigm of safety assessment

Research prioritisation and coordination is a key aim of the EPAA. A focus adapted to meeting regulatory needs is required.

Based on the results of a workshop organized by Working Group 2 (Research) of the EPAA in November 2006 in Ludwigshafen, it was concluded that the extended one-generation study would potentially be a suitable replacement of the two-generation study in the framework of REACH. The EPAA has partnered with ECETOC and the OECD in order to pursue such an approach. Three extended one-generation studies will be initiated by industry partners of the EPAA before the end of 2007 as part of an attempt to verify the feasibility of this approach..

The second main priority of Working Group 2 is to investigate what research opportunities are available to find alternative methods and strategies that will permit the assessment of the potential of xenobiotics to cause adverse health effects without the need for experimental animals. In developing *in vitro* or *in silico* approaches that are of real utility in safety assessment there is a need to reproduce in the laboratory the complexity of integrated biological systems that are tightly regulated in space and time, and to use these as a basis for asking questions of the ability of chemicals to cause changes associated with adverse health effects. Although there has been some limited success in this area, particularly with respect to the characterisation of certain specific types of toxic effect, neither *in vitro,* nor *in silico* methods are currently available to provide a reliable indication of the overall potential of materials to cause health effects.

In order to better consider how recent advances in science and technology can be harnessed and exploited to provide new and imaginative approaches to characterising health hazards and effective safety assessment, the EPAA will organise a high level Workshop in 2008 – to be hosted by Commissioner Potocnik, the EU Commissioner responsible for Science and Research - to examine the research opportunities to develop novel and innovative approaches to systemic toxicity testing. ("Alternative Approaches to Assessment of Systemic Toxicity – without the use of animals", 28/29 April 2008, Brussels) At this Workshop, moderated by Dr. Philip Campbell, editor-in-chief of Nature, a number of distinguished scientists from a broad range of disciplines - not necessarily working in toxicology, but representing the cutting edge of relevant other scientific areas - will discuss future alternative approaches in the safety assessment of chemicals and drugs.

As regards in vitro methods, one of the major drawbacks of most of them compared to intact organisms is at present their inability or low competence to metabolise xenobiotics. WG 2 decided to start working on this issue in the fourth quarter of 2007. This activity could give input to the European Commission's currently ongoing examination of possibilities to include a corresponding research topic in the FP 7 work programme of 2009. Based on the results of ongoing research projects and the input of all stakeholders within and outside the EPAA, WG 2 will likewise try to further identify research opportunities and give input into research funding programmes (e.g., FP 7) as done in the past.

How to measure uptake of 3Rs in regulatory testing?

One of the questions often raised in relation to the promotion of alternative approaches is how to measure progress and whether statistics can be used for this purpose.

In July 2007, under the auspices of EPAA, industry, competent authorities, Commission services and animal protection organisations debated the potential for EU statistical reporting

to measure the uptake of the 3Rs. It was also an opportunity to exchange views on the current structure of reporting and its ability to reflect today's research and testing features.

The following conclusions have been drawn:

1. Many factors (such as research investments, evolution of legislation etc) influence trends in animal use numbers. As such statistics are not a suitable tool to measure the success of uptake of 3Rs in regulatory testing.

2. Current statistical reporting practices are based on Directive 86/609/EEC and guidance agreed with member states in 1997 that reflects research and testing structures that were in place up to two decades ago. In addition, it is notable that regulatory testing represents only some 20% of the reported total number of animals used in the EU.

3. The current reporting methodology varies slightly between countries (e.g. prospective versus retrospective reporting), which therefore make it difficult to draw any definitive conclusions.

Participants to the July workshop recommended that EPAA:

- Should identify other ways of assessing the uptake of the Three Rs in regulatory testing, such as by considering the number of animals relative to R&D investments, or number of publications of validated methods, testing of the final product or ingredients thereof, inventories of 3Rs methods or use of alternative methods in testing strategies etc.

- Identify ways to enhance communication and education on alternative methods (incl. dissemination of information)

For the EPAA this implies a need for a clear communication on 3Rs, their role in regulatory testing, and the contribution that EPAA can give towards promotion of alternative approaches.

It also means that other ways must be developed to measure EPAA performance.

Reference documents:
Report from July 2007workshop

Are Liability and the Precautionary Principle barriers to the uptake of the 3Rs?

In different EPAA workshops and discussions, liability issues and implementation of the precautionary principle were repeatedly pointed out as a potential barrier to the uptake of 3Rs.

In different EPAA workshops and discussions, liability issues and implementation of the precautionary principle were repeatedly pointed out as a potential barrier to the uptake of 3Rs:

- Are companies and authorities reluctant to abandon well-known testing methods for new alternatives?
- Are companies active in global markets inclined to adopt methods that provide "best access" to the global market rather the "best method"?
- Is "responsibility" a consideration for authorities when imposing a new method?

These questions were debated in the context of a workshop on regulatory acceptance and implementation of 3Rs that took place in June 2007.

Regulation often leaves the manufacturer and authority with options, and options imply responsibility, or potential liability. Participants in the discussion therefore suggested that the main concern for authorities and companies should be the scientific robustness of testing methods, regardless of whether animal testing is involved or not. Companies and authorities have a duty to strive for the "state of the art" where safety is at stake. Relying on methods simply because they are traditional and well established is in itself not sufficient.

In the light of the workshop's outcome, it was agreed that impact of legal obligations, liability and precaution would be further explored.

Understanding hot spots and drivers for testing

Rationalising implementation of 3Rs in legislation was one of the EPAA objectives. While a number of sectoral dialogues between applicants and regulators are in place, EPAA could be used as a platform for monitoring progress and finding solutions to blockages using experience from different sectors.

Following a series of sector-specific analyses in the Autumn of 2006 on chemicals, pharmaceuticals, agrochemicals and cosmetics, small teams were set up within WG4 to follow up relevant issues. For chemicals, an ongoing monitoring of the implementation of 3R approaches in REACH and GHS legislation was established. For cosmetics, an information exchange with the Scientific Committee on Consumer Products (SCCP) was arranged. For pharmaceuticals, the duplication of batch release testing for vaccines is in the principal focus. The priority in the crop protection sector is the current revisions to the regulatory testing requirements and uptake of the ACSA (Agricultural Chemical Safety Assessment) recommendations. With respect to the food and biotechnology sectors, scoping exercises for future activities are still ongoing.

Special emphasis in 2008 will be given to cross-sectoral or horizontal analyses and exercises, to make maximum use of the unique opportunities provided by EPAA.

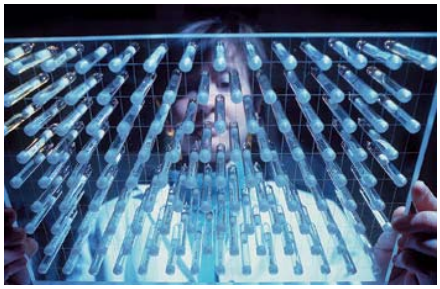
Speeding up validation process

The lack of availability of in vivo/in vitro reference data is often the main cause of delay in a validation exercise. Delays are also caused by inadequate content of information requests and lack of clearly identified person within companies/establishments. Companies and sectors have different priorities and interest: "one test does not fit all".

Providing quality information/substances for validation purposes:

Amongst the different scientific and non-scientific barriers and hurdles to validation (see below), access to existing data is the one that EPAA could tackle directly.

Based on a list of criteria agreed between EPAA partners, 24 alternative methods (replacement, reduction and refinement) were prioritised for support by EPAA companies. A survey on availability of data and substances was carried out at the beginning of 2007. After internal checks, most companies expressed interest more specifically on 3 fields (carcinogenicity, gastrointestinal absorption, eye irritation) and announced availability of data to support 14 methods in these fields (between 1 to 6 companies per method). This information was shared with ECVAM in June 2007.



Follow-up contacts with all companies able to provide data will be completed by ECVAM by the end of 2007. In the meantime, the survey on availability of information/substances will be circulated to the companies, which joined the Partnership in second half of 2007.

EPAA has a great potential to make the prioritisation and process of validation more efficient by enhancing the collaboration between ECVAM and industry in order to make available testing data and substances. In particular, EPAA enables:

- Provides a forum for the participation of sectors/companies, which would not necessarily be targeted with information request in first instance.
- Collaborative effort for supporting validation of methods with no direct interest to a given sector.
- Dialogue and agreement on the type of information to be included in the information request that allows efficient processing through company approval procedures.

Reference documents:

Prioritisation criteria
Questionnaires on availability of data substances for validation purposes.

Framework for collaboration with validators

In pursuing the objective of making the collaboration between validators and companies more efficient, partnership members have agreed upon the following:

- A list of dedicated industry contact persons with responsibility for validation procedures that is available to ECVAM;
- Guidance on type of information that should be contained in information requests from validators &
- Guidance on processing validators' requests within companies.

The expected outcome is a shortening in the time necessary for requesting/providing information and substances. No such system was in place previously. Expertise from different sectors made it possible to determine a general common framework, which can be used by all types of establishments. If successful, EPAA will further promote this approach to other companies and sectors, which are not part of the partnership.

Reference documents:

Examples of questionnaire on availability of data (see section above)
SOP document for processing information request

Removing barriers to validation

Besides access to existing information/substances (addressed in action stream "speeding up validation") and the time necessary to carry out scientific work in laboratories, the length of the overall validation process suggested that there might be other barriers that would need to be addressed.

Dialogue within the partnership helped to identify a number of issues which are known to cause delay in validation procedure and which go beyond mere delays in providing information/substances as described under "Speeding up validation".

While some of these cannot be solved within the Partnership, the EPAA identified a number of topics where collaborative efforts could potentially bring solutions.

- On scientific side, these issues include;
    - Definition of the purpose of use of the method
    - Lack of information about reference method
    - Unavailability of data and substances (the survey has demonstrated that, contrary to expectations, not all information required by ECVAM exists already within companies)
    - Lack of established validation process for new generation/new technology approaches

- Lack of regulatory reference test
- Publication and notification bias (high number of positives/negatives)

- The following administrative hurdles have an impact on the length of the process;
  - Time necessary to complete data set
  - IP or business confidentiality aspects
  - Time necessary to select and contract laboratories (open call, etc.)
  - Duration of peer review process (timing and logistic aspects)
  - Budget constraints

The EPAA umbrella was the first real opportunity to have a structured discussion and agreement on validation hurdles. Some of them had already been addressed unilaterally by ECVAM or by the industry. Joint analysis made the picture more complete and joint actions will be undertaken in 2008 on each of them. Responsibilities will have to be defined and recommendations set. On this basis a detailed action plan involving all necessary stakeholders with implementation and monitoring mechanisms for the next 3 years of the Partnership is currently being designed.

Reference documents:

Report from 2006 workshop on Barriers to Validation
October 2007 discussion paper on Barriers to Validation

Regulatory acceptance and implementation

Developing and validating alternative methods for regulatory testing purposes can only make sense if at the end of the process regulatory authorities accept it is used for registration or authorisation of a product or compound.

This important issue was given a high priority by the EPAA, with an action on identifying barriers to acceptance and developing an action plan to overcome them. Setting up a working group specifically dedicated to validation and regulatory acceptance of 3Rs approaches shows also the importance of these matters, which are closely interlinked.

On 18 and 19 June 2007, EPAA held a workshop on regulatory acceptance of 3Rs approaches. The purpose of the workshop was to identify potential barriers and reasons for delay of regulatory acceptance of alternatives. Scientific, administrative, political and legal aspects were examined through case studies and debated with representatives of policy-makers, regulators, validators' and industry.

The debates identified the following preliminary suggestions:

- Involvement of regulators at early stage of validation of a method
- Better dissemination of information about alternatives available and organisation training in use
- Regular cross-sectoral dialogue as the one initiated by EPAA
- International collaboration modelled on the ICH (International Conference on Harmonisation)

These recommendations will be further consulted upon with different stakeholders, taking into account the international aspects such as differing approaches to safety issues, mutual recognition of tests, etc. This discussion will contribute to setting recommendations for further actions.

As for barriers to validation, clear responsibility for different aspects, as well as boundaries of EPAA involvement, will be determined and agreed with relevant stakeholders.

The first workshop in June 2007 demonstrated the added value of the EPAA inter-sectoral platform and its potential as a catalyst for cross-fertilisation. Comparing different mechanisms and solutions from different sectors helps in identifying the most efficient approaches while maintaining sectoral specificities and needs.

Reference documents:

Presentations from 18-19 June workshop on acceptance
Conclusions from 18-19 June workshop on acceptance

What's next?

A realistic assessment of what is the direct remit/responsibility of partners will be carried out to ensure that objectives remain realistic without compromising the ambitious directions set at the inception of the EPAA. In addition to follow up from 2007, some new activities in 2008 would include:

Mapping 3Rs methods and research	• Promotion of the databases amongst end-users and testing their utility.
Research: cross-fertilisation	• High-level workshop on changing paradigm of safety testing. • Identification of gaps based on the mapping exercise.
Rationalising implementation of 3Rs in legislation	• Explore with the European Food Safety Authority the possibility to promote 3R approaches in the food sector. • Monitoring implementation of regulation in order to identify and signal to authorities the potential for 3Rs approaches in EPAA sectors.
Validation and Acceptance	• Start discussions on the acceptance of methods, which have been validated or developed by other bodies (OECD, companies etc.).

EPAA interactions

European Parliament

On May 23 2007, the industry co-chair of the EPAA Steering Committee, Charles Laroche presented the EPAA and progress made after the launch of its Action Plan to the European **Parliament's Intergroup on the Welfare & Conservation of Animals**.

Industry Forum

An EPAA industry members' forum was organised on June 5, 2007. This event provided an opportunity for the industry coalition to review each sectors' priorities in light of the action programme, critically assess progress achieved and inform industry partners, especially new members, on the structure and organisation of the EPAA.

Mirror Group

The **Mirror Group**, chaired by MEP Mrs Roth Behrendt, met on June 6 2007. Following an in-depth discussion, in which clarification was sought on a series of issues the Mirror Group, concluded that EPAA is on the right track and that progress is being made. It strongly

supported the proposal of the Steering Committee to focus the 2007 Conference on regulatory acceptance. The Group highlighted the fact that reduction and refinement are important as they can lead to significant results at the short term. However, precisely because more time is needed for replacement, all attention should immediately be given to action on replacement. The Mirror Group made various suggestions, and asked the EPAA partners' attention for a follow-up to calls for proposals under FP7 regarding replacement, the provision of data to ECVAM allowing validation to be accelerated, the international dimension of validation, and a balanced and consistent communication policy. (Link to Mirror Group section on EPAA web)

6th World Congress on Alternatives

EPAA representatives made various presentations during the **6th World Conference on Alternatives and Animal Use in the Life Sciences** that took place in Tokyo from 21 – 25 August 2007. At a global level, EPAA is recognised as a unique initiative that illicits high expectations and is seen as a potential model for other geographies. (Link to presentations on EPAA site)

SCCP

On 2 October 2007, EPAA presented to the **Scientific Committee for Consumer Products** the outcome of an analysis of the cosmetics sector. Consistent with its Memorandum on the Actual Status of Alternative Methods on the Use of Experimental Animals in the Safety Assessment of Cosmetic Ingredients in the European Union[1] members of the SCCP declared that actual progress towards alternative methods should be presented in a realistic manner, and not be overstated.

FELASA

As part of its policy on promoting the dissemination of the 3Rs, EPAA sponsored the publication of **FELASA** summary revised appendix A to Council of Europe Convention ETS123 providing for new standards for housing and care for all species. (Link to the booklet)

Communications

In 2007, the EPAA reconsidered its **communication policy**. An EPAA Newsletter was launched and the organisation of the EPAA website (www.epaa.eu.com) was improved. The Steering Committee clarified that EPAA communication objectives should be to articulate the 3Rs context in which the EPAA is working, providing more information on the 3Rs concept. The remit and objectives of the EPAA should be better explained in that context, its potential and its limits. Finally, in the light of these clarifications, progress on the implementation of the EPAA Action Plan should be reported.

[1] 12th plenary on 19 June 2007 ;
http://ec.europa.eu/health/ph_risk/committees/04_sccp/sccp_statements_en.htm

Annex 1: Milestones

Meetings and Events in 2007

Workshops and Events

23 May 2007	Presentation EPAA to Intergroup on Welfare & Conservation of animals
5 June 2007	Industry Members Forum
6 June 2007	Mirror Group meeting
18-19 June 2007	Workshop on Acceptance of alternative approaches
12 July 2007	Workshop on statistical reporting and 3Rs
1 September 2007	Launch of the interactive database of in house methods and research projects
1-2 October 2007	Workshop on best practice in dissemination of 3Rs information
5 November 2007	EPAA Conference (Regulatory acceptance and implementation of 3Rs approaches)

Reports and Progress

- Information about availability of information to support ECVAM validation, June 2007
- Launch of the in-house methods database (August 2007) and the 3Rs research database (October 2007)
- Workshop report: statistical reporting, September 2007
- Discussion paper on barriers to validation, October 2007
- Workshop report: preliminary conclusions on barriers to regulatory acceptance, October 2007
- Workshop report: Dissemination strategies: How do they influence the uptake of new 3Rs methods across laboratories/boundaries, October 2007

Annex 2: EPAA partners as of November 2007

Companies

Abbott
Astra Zeneca
Avon
BASF
Bayer
Beiersdorf
Chanel
Colgate-Palmolive
Dow
DSM
Elizabeth Arden
Estée Lauder
Euroderm
Glaxo SmithKline
Henkel, Phenion
Johnson & Johnson
Kanebo
Kimberly-Clark
L'Oréal
LVMH
Merck
Merck Sharp and Dohme
Novartis
Novo Nordisk
Novozymes
Pfizer
Procter & Gamble
Reckitt Benckiser
Roche (F. Hoffmann-La Roche)
Serono
Shiseido
Solvay
StratiCELL
Syngenta
Unilever

Industry associations

Cefic
EFPIA
Colipa
EuropaBio
IFAH-Europe
A.I.S.E.
ECPA

Services of the European Commission

DG Enterprise and Industry
DG Research
DG Health and Consumer Protection
DG Environment
DG JRC and ECVAM

Annex 3: EPAA working groups as of November 2007

Mapping of past and current 3R activities

Bayer Crop Science
ECOPA
Eurogroup
European Commission - DG Research
GlaxoSmithKline
Henkel Phenion
Johnson & Johnson
Pfizer
Procter & Gamble
Unilever

Prioritisation, promotion and implementation of future research based on the application of the 3Rs

Abbott
BASF
Bayer
Covance
Eli Lilly
European Commission - DG Research
GlaxoSmithKline
Henkel Phenion
Intervet
L'Oréal
Procter & Gamble
Syngenta
Unilever

Identification, dissemination and implementation of best practice in the 3Rs

AstraZeneca
Covance
Eurogroup
European Commission - DG JRC
Henkel Phenion
Merial
Novartis
Novozymes
Pfizer

Implementation of the 3Rs in regulation and decision-making

AstraZeneca
Bayer
Beiersdorf (BDF)
CEFIC
Covance
EFPIA
EFSA
Eurogroup
European Commission - DG ENTR
European Commission - DG Environment
European Commission - DG JRC, ECVAM
European Commission - DG SANCO
European Commission - EMEA, UK
GlaxoSmithKline
Henkel Phenion
Pfizer
Roche
Syngenta

Validation and Acceptance

AstraZeneca
BASF
Bayer
Beiersdorf (BDF)
ECOPA
EFPIA
European Commission - DG ENTR
European Commission - DG Environment
European Commission - DG JRC, ECVAM
European Commission - DG SANCO
GlaxoSmithKline
Henkel Phenion
Intervet
Johnson & Johnson
L'Oréal
Pfizer
Unilever