

Sustainability & PVC Additives

Muriel HEBRARD – Plastics Additives R&D

Pierre HEBRARD – Plastics Additives Technical Manager

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Rohm and Haas Company

Who we are - What we do



- **Largest specialty chemical company in the US and second largest in the world**
- **Extensive technical knowledge and industry expertise**
- **Nearly a century of innovation and service**
- **Global business: N. America, L. America, Europe, Asia-Pacific**



- **Over 100 manufacturing sites, tech. research and customer service sites in 27 countries**
- **Over 16,500 highly qualified employees**
- **Annual sales revenue around US \$ 8.8 billion (2007)**
- **Spending of over US \$300 million in R&D**

Rohm and Haas Today

We Serve a Broad Set of End Markets



imagine the possibilities™

Specialty Materials: A Unique Global Franchise

World's largest acrylic polymer business

- Leverages Rohm and Haas's knowledge of the acrylic chain
- Integrated, global network of manufacturing sites

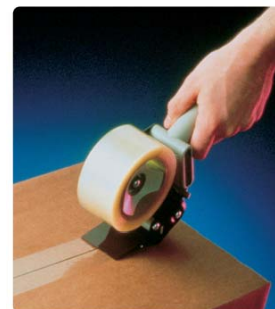
Includes Experience and expertise
in many other technologies

Business portfolio

Paint and Coatings Materials

Primary Materials

Packaging and Building Materials



imagine the possibilities™

Rohm and Haas Plastics Additives

PARALOID™ Impact Modifiers
For PVC and Engineering Resins

PARALOID™ Processing aids
For PVC

ADVASTAB™ and **ADVAPACK™** Heat Stabilizers & One-packs
For PVC

ADVALUBE™ and **ADVAWAX™** Specialty Lubricants
For PVC and Engineering Resins

VINYZENE™ Biocides
For flexible PVC and PU

What is Sustainable Development?

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

Brundtland (1987)

Environmental sustainability
Economic sustainability
Social-political sustainability



Rohm and Haas, a long history of EHS and social responsibility

EHS and Sustainable Development Principles and Policy

Sustainable development to be included in all Rohm and Haas products and process design, as well as in business decisions.

Long term sustainable development goals: clear challenges

No illnesses/injuries/discharges/incidents – reduce energy/water use/wastes Compliance with regulations & voluntary commitments
Products designed to be re-usable, recyclable or made from renewable sources – Delivery safer solutions meeting customers and society needs.

Board Committee on Sustainable Development

To monitor corporate social responsibility, commitments and progress on EHS and Sustainable Development

Rohm and Haas, a long history of EHS and social responsibility

Code of business conduct and ethics

Ensuring that all Rohm and Haas employees integrate respect, integrity and individual accountability values

Human rights

Defining Rohm and Haas expectations, end expectations for suppliers; including for instance no child labour and no discrimination.

R&D programs: example of sustainable technologies (over last 2 years)

- 1 **Avanse**TM waterborne acrylic technology for durable coatings optimizing pigment dispersion while lowering VOC emission
- 2 **AquaSet**TM formaldehyde-free isolation technology with superior performance over traditional glass fiber made with phenol-formaldehyde resins
- 3 **Amberlite**TM highly perchlorate-selective ion exchange resins for drinking water purification and recyclable after usage

Rohm and Haas, a long history of EHS and social responsibility

Profitable and socially responsible growth: Latin America example

Colombia

Rohm and Haas invests in two key programs: the **Programa de Concientización en Manejo de Residuos Orgánicos, Plástico y Papel** (“Program for the Responsible Management of Organic, Plastic, and Paper Waste”) and the **Programa de Reducción de Electricidad, Agua, Gas y Desechos** (“Program to Conserve Energy, Water, and Gas, and to Reduce Waste”).

Argentina

Rohm and Haas involved in a broad scope initiative: together with nine other Argentinean companies, the subsidiary signed an agreement to create **Fundación Caminando Juntos**, an NGO representing United Way International in the country.

Many other initiatives in Mexico, Brazil, Chile illustrating Rohm and Haas involvement in Latin America commitment to building a sustainable society.

Rohm and Haas and sustainable development: what's next?

- How to actively participate to and accelerate the **Chemical industry** journey towards sustainability?
- How to actively participate to and accelerate the **Vinyl industry** journey towards sustainability?

Rohm and Haas & The Natural Step (TNS)



The Natural Step

International NGO founded by K.H. Robert, Swedish physician

Scientific approach to develop Sustainable Development strategies

TNS framework:
Referential (4SC) - methodology - tools

Strategic advise
and education

TNS & Rohm and Haas

- Rohm and Haas involved initially with TNS through HYDRO POLYMER
- PVC sustainability 5 key challenges, including:
 - raising awareness on SD across the PVC industry
 - use of sustainable additives
- Long term partnership between Rohm and Haas and TNS (Since Sept.2007)

The Natural Step framework: the 4 system conditions (sc)

In a sustainable society, nature is not subject to systematically increasing...

1/...concentrations of substances
extracted from the Earth's crust

2/ ... concentrations of substances
produced by society

3/...degradation by physical means

In a sustainable society, people are not subject to...

4/...conditions that systematically undermine
their capacity to meet their needs.



TNS methodology: Sustainability Life Cycle Assessment (SLCA), an efficient holistic tool

- **Objective**

Develop an easy accessible tool, giving strategic overview on the product level (to see the ‘whole picture’), to encourage ‘whole life thinking’, to reward movement toward sustainability.

- **Major differences with LCA and SLCA**

Qualitative assessment

Much quicker & cheaper

Provides a snapshot of the product or process

Focus on the “SD” potential of the products

SLCA case study: PVC heat stabilizers

SLCA process

Participatory process with relevant key functions:

business/R&D/PID/manufacturing

1. Backcasting on sustainable PVC heat stabilizers (Vision)
2. External perspective analysis (e.g. business and regulatory contexts)
3. Impact assessment on existing and new stabilizers
along life cycle stages
towards the 4 system conditions (TNS)
4. Turn impacts into questions ► color rating based on yes/no answers
highlight SD progress between tin and organic stabilizers
highlight remaining areas of concern

SLCA on PVC heat stabilizers: outcomes



Existing	System Conditions				NEO	System Conditions			
Life Cycle Stages	SC1	SC2	SC3	SC4	Life Cycle Stages	SC1	SC2	SC3	SC4
1. Raw materials	*		**		1. Raw materials	*		**	
2. Stabilizer synthesis	***	***			2. Stabilizer synthesis	***	***		
3. Packaging & distribution					3. Packaging & distribution				
4. PVC processing					4. PVC processing				
5. Use of rigid PVC articles					5. Use of rigid PVC articles				
6. End of life					6. End of life				

- SC1 : “... not increasing concentrations of substances extracted from Earth’s crust”
- SC2 : “... not increasing concentrations of substances produced by society”
- SC3 : “...not increasing degradation by physical means”
- SC4 : “... no conditions that underdetermine people’s capacity to meet their needs”

SLCA on PVC heat stabilizers: outcomes

Existing to NEO : significant sustainability progress regarding raw materials, manufacturing, end use...

Not based on heavy metal

Eco-friendly synthesis process (solvent free, low energy and water use, no waste)

We can consider local production to reduce transportation environmental impacts

Enhances recycling of PVC

...but all life cycle stages should be considered to achieve fuller sustainability.

Key recommendations to move forwards:
consider all the value chain

- raw material sourcing and supplier selection on SD criteria
- sustainable energy sourcing / packaging / transportation options
- extend SD awareness within Rohm and Haas, starting by R&D
- initiate SD forums with customers and end-users

Rohm and Haas plans towards Sustainable Development: recognition from customer and peers.

Rohm and Haas, PVC additive supplier for Hydro Polymers

▶ 3rd sustainability event (June 07/Austria)

Rohm and Haas and all major additive suppliers have presented what they do towards SD

R&H won the award thanks to:

- applied methodology
- honest and rigorous approach
- involvement of top management

Packaging and Building Materials Wins Sustainability Award from Customer in Europe

Wednesday, July 25, 2007 / ER Communications

In June, Hydro Polymers, an important Packaging and Building Materials customer for Plastics Additives in Europe, held the third Sustainability workshop for its top 10 strategic suppliers, which includes Rohm and Haas.

The purpose of the workshop was for the suppliers to report on their progress during the last year in utilizing the Sustainable



Some more developments towards sustainability

Water and energy savings

Significant progresses over the last 5 years...and new plans for operational excellence and use of renewable energy (wind energy, UK)

Education program on Sustainable Development

Rohm and Haas active participation in new distance learning course

« **Leading change for a sustainable Chemical Industry** »

(Rohm and Haas - Akzo Nobel - Kronos – Omya – Synthomer - Hydro Polymer...)

Rohm and Haas is fully engaged and open to partnership within the industry and value chain

- 150MM\$ allocated to sustainable chemistry R&D
(new products / energy efficiency / process improvements)

In particular for the vinyl industry...

- R&D and industrial partnerships for synthesis of **acrylic** compounds from renewable resources and/or from bio-mass
- Innovative heavy metal free PVC **heat stabilizers: Advapak™ NEO**

Conclusion

Sustainability is a MUST...and an opportunity

- Ethical behavior
- Already concrete customer & consumer needs and expectations for sustainable solutions

Requires a holistic approach to the value chain

- Partnership are mandatory for success
- Involves our suppliers and customers

Thank you for your attention