Chemical Approval Process – UK Upstream

Production Chemistry/ Shell Health

Alex Hills
TYPES OF CHEMICAL APPLICATIONS

MANY DIFFERENT CHEMICAL TYPES

- Paints
- Adhesives
- Tapes
- Cleaning chemicals
- Process chemicals
- Lubricants
- Cement
- Speciality products
- Drilling fluids
- Hydraulic fluids
- Solvents
- Laboratory reagents

MANY DIFFERENT FUNCTIONS

- Protective coating
- Insulating coating
- Bonding
- Corrosion inhibitor
- Oil/water separation
- Accelerator/retarder (cement)
- Wear prevention
- Hydrate precipitation inhibition
- Scale inhibitor
- Dispersant
- Wax dissolver
- Cleaner
PRODUCT STEWARDSHIP: Reference point

Product Stewardship is the responsible and ethical management of the Health, Safety and Environmental aspects of a product throughout its lifecycle.

Product Stewardship does not end at the factory gates..... Hence, ‘cradle to grave’

Product Stewardship reduces risk to:
- individual companies
- the industry as a whole
- the end users and those in the supply chain
- the general public
- the environment
# Shell Product Stewardship Process – Chemical Selection

## Activity – Product Risk Assessment & Hierarchy of Control

**NOTE:**
- **A** = Accountable. The person who makes the final decision and has ultimate ownership;
- **R** = Responsible. The person assigned to do the work;
- **S** = Support. The person who supports the assigned work.
- **C** = Consult. The person who should be consulted before an action or decision is taken;
- **I** = Inform. The person who should be informed that a decision or action has been taken.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Manager</th>
<th>Supervisor</th>
<th>Person Responsible for Purchased Product Selection</th>
<th>Local PS FP/HSE SME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain locally compliant SDS from supplier</td>
<td>A</td>
<td>R</td>
<td>I/C</td>
<td></td>
</tr>
<tr>
<td>Conduct Preliminary HSE Risk Assessment Screen</td>
<td>A</td>
<td>C</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>If preliminary Risk assessed Blue, manage Hazards through the effective implementation of the HSSE MS.</td>
<td>A</td>
<td>R</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Conduct formal HSE Risk assessment and determine Hierarchy of Controls on screened Risk assessed Red or Yellow Products</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Eliminate the use of the Product</td>
<td>A</td>
<td>R</td>
<td>I/C</td>
<td></td>
</tr>
<tr>
<td>• Substitute with a Product of lower Risk</td>
<td>A</td>
<td>R</td>
<td>I/C</td>
<td></td>
</tr>
<tr>
<td>• Apply the requirements of Managing Risk</td>
<td>A</td>
<td>R</td>
<td>S/C</td>
<td>I/C</td>
</tr>
<tr>
<td>Documentation Risk Assessment</td>
<td>A</td>
<td></td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Process assurance</td>
<td>A</td>
<td></td>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>
Each of the activities is a discrete step in the deployment of chemicals.
Operator Health and Safety

Exposure to chemicals that can be hazardous to health

Process Safety

• Process safety is focused on preventing catastrophic accidents
• Structural collapse, explosions, fires and toxic releases associated with loss of containment of energy or dangerous substances such as chemicals and petroleum products.
• Fundamental to ensuring physical assets are well designed, safely operated and properly maintained.
• Chemical management can be a significant part of process safety

Environment

• Environmental impact, if discharged

Technical Considerations

Commercial Considerations
CHALLENGES

Changing rules and regulations

Changing chemical classifications
  Substances of very high concern (SVHC)

Changing chemical environmental classification
  Driven by “greening”

Resource required for compliance
  • The drive for simplification
  • Organisation competence requirements

The profit margin conflict
  • Less than ideal products being selected/proposed

REACH registration cost relative to chemical demand
  • Challenges commercial viability of chemical
  • Inhibits innovation
  • Operator may directly for chemical registration

Non-compliance
  • Vendor formulation changes not being notified and re-registered
  • Chemical vendors from outside EU
  • Generic COSHH assessments (not site specific)

Different procurement routes
  • Risk of approval and procedures being circumvented
Legal Requirements COSHH & REACH

• Safety Data Sheets must meet criteria as specified in REACH
• For eSDS, do Exposure Scenarios cover our application
• COSHH assessment undertaken before use of product
• Demonstrate hierarchy of control i.e. justification on why the product cannot be substituted or eliminated
• Chemicals that fall under Offshore Chemical Regulations (OCR) 2002 (amended 2011) must be on an approved chemicals permit
### Chemical Approval Process

![Diagram showing the process]

Each SME receives CAF to approve controls (so waiting on each SME reply individually)
Sometimes the CAF comes back to PS-FP or requestor as correct controls arent in place
New controls then filled out and sent back to SME
SME then approves and sends back to PS-FP

- Requestor / Selector
  - Submits CAF to PS-FP

<table>
<thead>
<tr>
<th>Role</th>
<th>Total Time per CAF (mins)</th>
<th>Time per Year (man hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requestor</td>
<td>25</td>
<td>152</td>
</tr>
<tr>
<td>Technical Selector (Requestor)</td>
<td>25</td>
<td>152</td>
</tr>
<tr>
<td>Technical Selector (Approver)</td>
<td>10</td>
<td>61</td>
</tr>
<tr>
<td>PS-FP</td>
<td>75</td>
<td>456</td>
</tr>
<tr>
<td>Health SME</td>
<td>20</td>
<td>122</td>
</tr>
<tr>
<td>Safety SME</td>
<td>20</td>
<td>122</td>
</tr>
<tr>
<td>Environmental</td>
<td>20</td>
<td>122</td>
</tr>
</tbody>
</table>

**Challenges**
- Cumbersome process
- Still get non compliances
- Technical selector sometimes not involved in job
- Duplication of existing processes ("pseudo COSHH")
- Aligns with Shell requirements (over and above legislation)
- In the UK, we want to develop a process that aligns with legislation as a minimum
Difficulties Identified with the UK Process in practice

- Several links in the chain leading to bottle-neck risks;
  - Multiple approval requirements
- Challenge to really look at substitution in a meaningful way; needs to be addressed by person with good technical knowledge of the application.
- Lack of awareness of the process leads to urgent requests;
- Can ‘double-dip’ with COSHH, having to in effect run a mini-assessment prior to purchasing.

- More Streamlined process agreed.
  - Inclusion of regulatory questions in Chemical Approval Form (CAF)
  - Inclusion of HoC questions in CAF with increased ownership from requestor
  - Empowerment of Chemical Selector to approve, seeking advice as required.
# Revised Process 1

**Chemical Approval Form**

Version 6 edited 27/03/2018

UK & IRELAND EXCLUDING ONE GAS WESS

Please note new guidance for each section on completing the newest revision of the Form.

Sections 1 to 5 must be completed by an individual with knowledge of the application. The data for completion can originate from a Shell employee, a contractor working on behalf of Shell or chemical vendor representative. Procedure and tips on how to complete the CAF in tabs 2 and 3.

Requestor shall confirm that the product is technically acceptable for the application. Assurance can be derived from a Shell employee, a contractor working on behalf of Shell or chemical vendor representative.

Instructions to complete the preliminary risk assessment can be found in “Help to complete CAF” tab. Please note this form is fillable and can be completed by all Shell staff and contractors, so do not provide confidential information.

The form should then be forwarded to the Product Stewardship Focal Point (PS-FP) in Production Chemistry/Chemical Management Team by email (ACE-PS-chemical-ApPROval@shell.com), along with a SCSR compliant with local EU legislation.

Chemical Approval is location specific. If a new CAF is required for each location wishing to use the same chemical. It is likely this chemical will be used at another location under the same application, please state all locations. The CAF is also chemical category specific. Failure to accurately complete this form could result in the issuing of improvement or prohibition notices to Shell by UKHSE, and/or prosecution of Shell due to non-compliance with UK legislation.

## 1. Requestor Details

<table>
<thead>
<tr>
<th>Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone Number</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
</tr>
</tbody>
</table>

## 2. Product and SDS Details

<table>
<thead>
<tr>
<th>Product Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of supplier</td>
<td></td>
</tr>
<tr>
<td>Location of where chemical is intended to be used (consider other platforms that this chemical will be used under the SAME application)</td>
<td></td>
</tr>
<tr>
<td>Chemical Category</td>
<td>Production</td>
</tr>
<tr>
<td>Description of intended use</td>
<td></td>
</tr>
</tbody>
</table>

2.8 As requestor of this product, have you reviewed the SDS to ensure it's under 3 years old, REACH compliant and in English? For guidance on compliance, see “REACH Regulations” tab.

2.7 Does the SDS contain an appendix detailing exposure scenarios? If yes, does one of the described exposure scenarios apply to your product?

2.9 As a requestor, you are responsible to confirm the product is technically acceptable to be used:

<table>
<thead>
<tr>
<th>Confirmation</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.8 If the exposure scenarios in the appendix does not describe your planned use, consult supplier.

The supplier must either recommend an exposure scenario to use or add an exposure scenario relevant to your use.

2.10 Justification | Free text |

Shell UK
### PRELIMINARY Health Risk Assessment screening
#### Upstream Europe

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>HEALTH</th>
<th>ENVIRONMENT</th>
<th>SAFETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>Acute toxicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 1/2, 1A, 1B &amp; 1C, H340</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 1A, 1B &amp; 1C, H350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 1A, 1B, H350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 1B, H350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 1/2, H360</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 1A, H350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 2, H361/H362</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 2A/B, H319, H320</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 3 &amp; 4, STOT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 3/4, STOT (inhalation irritant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 2A/B (eye irritant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 3/4 (oral acute)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 3/4 (skin acute)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat. 3/4 (inhalation acute)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Laboratory Setting (only applies to Health and Safety)

- **Annual Consumption/Site**
  - < 10 tonne: A
  - 10 - 100 tonne: A
  - > 100 tonne: A

- **People and Environment Exposure**
  - Infrequent/Long Exposure (<1/week, >15 minutes)
  - Frequent/Short Exposure (<1/week, <15 minutes)
  - Deliberate release or discharge to environment (direct, via drains, produced water/inflammants)
  - e.g. Industrial spraying, Discharge to environment, Roller application or brushing

- **Harms public health and the environment by**
  - POB, vPvB
  - Extends life with long lasting effects
  - Harmful to aquatic life with long lasting effects
  - May cause long lasting effects to aquatic life
  - May cause long lasting effects to the upper atmosphere.
  - Destroying ozone in the upper atmosphere.

#### Consequences

- **People**
  - A: Severe
  - B: Very Severe
  - C: Severe
  - D: Very Severe

- **Environment**
  - A: Severe
  - B: Very Severe
  - C: Severe
  - D: Very Severe

- **Regulatory**
  - A: Severe
  - B: Very Severe
  - C: Severe
  - D: Very Severe

#### Increasing Likelihood

- **In-Site**
  - A: High
  - B: Very High
  - C: High
  - D: Very High

- **People**
  - A: High
  - B: Very High
  - C: High
  - D: Very High

- **Environment**
  - A: High
  - B: Very High
  - C: High
  - D: Very High

- **Regulatory**
  - A: High
  - B: Very High
  - C: High
  - D: Very High

Shell UK
Revised Process 2

3. How Chemical will be used and People & Environment Exposure Details

3.1 Frequency of Exposure and Length of Exposure to people

3.2 Environmental Exposure

3.3 Animal Transportation and Location

4. RAM assessment - to be filled in by Requestor

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Hazard Identification (found in section 2 of the SDS under Classification (REGULATION (EC) No 1907/2006)]</th>
<th>RAM Rating</th>
<th>Hazard Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health (H221)</td>
<td></td>
<td>D</td>
<td>0</td>
</tr>
<tr>
<td>Safety (H361)</td>
<td></td>
<td>D</td>
<td>0</td>
</tr>
<tr>
<td>Environment (H431)</td>
<td></td>
<td>D</td>
<td>0</td>
</tr>
</tbody>
</table>

5a Regulatory Information

5.1 As a requestor, you are responsible to ensure correct hierarchy of control has been demonstrated. Can the use of the chemical be eliminated?

5.2 Is no give a reason for elimination?

5.3 For chemicals which screen as red/yellow, can the product be substituted by one with lower risk?

5.4 If no, explain why the product cannot be substituted

5.5 If the product screened red or yellow for Health or Safety and you would like further guidance on control measures in SDS, please contact Safety SME: safety.sds@shell.com. NOTE: COSHH assessment on site will add

5.6 If the product screened red or yellow for Environment, please fill out section 5b (using control measures in SDS) and send CAF to Environmental SME for review. If the product contains blue, send CAF and SDS to AEE-SPE-Chemical-Approval@shell.com

5.7 Confirm the specific environmental permit is in place, if applicable, or will be completed before use of product

Confirmation: USE/DROP/DENY

I hereby declare that:
This chemical is technically acceptable to be used for the specific application at site and its use cannot be eliminated / substituted and hierarchy of control has been applied.
I understand that if requirements in this form are not complied with, Shell could be prosecuted.

5.6 Name Chemical Requestor:

               

5.9 Date:
Revised Process 3

### 5b Environmental Control Measures
(This section only to be filled out if Environmental section of RM screens Red or Yellow)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.10 Describe activities where environmental discharge can occur, or how it is unlikely.</td>
<td>Free text</td>
</tr>
<tr>
<td>5.11 Will product be used stored in enclosed areas or areas with drains?</td>
<td>Free text</td>
</tr>
<tr>
<td>5.12 Describe measures in place to restrict discharge or limit environmental damage, including spill containment</td>
<td>Free text</td>
</tr>
<tr>
<td>5.13 Describe fate of unused product:</td>
<td>Free text</td>
</tr>
</tbody>
</table>

### 6 Risk Review - to be filled in by environmental SME when applicable

<table>
<thead>
<tr>
<th>Environment</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME Name:</td>
<td>Free text</td>
</tr>
<tr>
<td>Date:</td>
<td>dd-mm-yyyy</td>
</tr>
</tbody>
</table>

I declare that red/yellow RM screened risk(s) is assessed/reviewed and that:

### 7 Approval - to be filled in by PS-FP, Production Chemistry/Chemicals Management Team

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does this chemical meet requirements for approval?</td>
<td>USE DROPDOWN</td>
</tr>
<tr>
<td>If not give reason:</td>
<td>Free text</td>
</tr>
<tr>
<td>Name of PS-Focal Point (delegate):</td>
<td>Free text</td>
</tr>
<tr>
<td>Date Approved and added to ProShare and Scramble:</td>
<td>dd-mm-yyyy</td>
</tr>
</tbody>
</table>

Once approved, PS-FP should communicate PS number to relevant personnel, including COSHH assessor for the specified site. Communication on whether product screens red or yellow for Health or Safety should also be highlighted.