

The logo for ATC (The technical committee of petroleum additive manufacturers in Europe) is displayed in a white box. It features the letters 'ATC' in a bold, teal, sans-serif font.

The technical committee
of petroleum additive
manufacturers in Europe

The logo for atiel is displayed on a dark background. It features the word 'atiel' in a grey, lowercase, sans-serif font, with a yellow swoosh that starts under the 'i' and curves around the 'l'. A small yellow circle is positioned above the 'i'.

DRIVING STANDARDS
IN LUBRICANT TECHNOLOGY

ATIEL/ATC Generic Exposure Scenarios

Sabine Hausmann
ATIEL ATC GES Working Group

UEIL Annual Congress
Brussels, October 2013

STEP 1

Allocate lubricant products to ATIEL/ATC use group(s): Document 2 and Document 3

Check product meets boundary conditions:
a. Human Health: Document 4 (Rows 1 & 2)
b. Environment: Documents 6 and Document 7

Attach GES to product SDS for each required use group: Document 5a and Document 5b

STEP 2

Allocate raw materials (RMs) to use groups:

Document 3

Link uses > products > raw materials.

STEP 3

Consistency check for uses:

Document 3

STEP 4

Consistency check for human health:

Document 4 (Rows 3 and 4), Document 5b,
and Document 8

STEP 5

Consistency check for environment:

Document 6, Document 9 and Document 10

STEP 6

If the raw material ext-SDS is not consistent with the GES: follow options outlined in the guidance Document 0

STEP 7

If the raw material is registered only as an intermediate under strictly controlled conditions (SCC), and full registration is needed: follow options outlined in the guidance Document 0

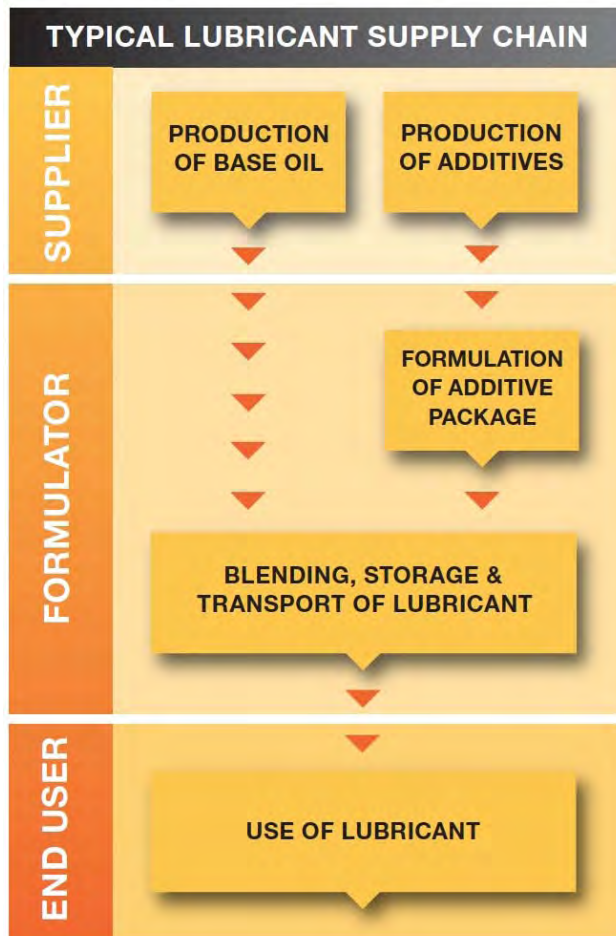
Contents

- Assumptions
 - Options for communicating Exposure Scenarios for Mixtures
 - Features of the Lubricants Industry
- How were GESs developed?
 - Description of uses
 - Contributing Scenarios for Human Health and Environment
- Application to Products
- Consistency Check for incoming Raw Materials
- Key information requirements for Downstream Users
- Advantages of the ATIEL ATC Approach
- Roll out plan and documentation

Options for communicating ES information on mixtures

Append supplier ESs to own product SDS	X	<i>Resulting document cumbersome and complex</i>
Consolidate information into own mixture ES	X	<i>Can be difficult to do. Have to wait for all information</i>
Incorporate information into body of SDS	X / ✓	<i>Approach used for unclassified products</i>
Create GES	✓	<i>Approach used for classified products</i>

Features of the Lubricants' Supply Chain



- Well-defined and structured sector
 - Limited number of manufacturers and major formulators
 - Large number of smaller formulators
 - Formulations oriented towards specific end uses
 - Stable formulations during life cycle
 - Formulators sell directly to distributors and end-users
- *Characteristics that enable generic-based solutions for the sector to be scoped, trialled and refined*

How were GESs developed ?

- Mapping of product types to typical uses
- Assignments of adequate use descriptors (SUs, PROCs, ERCs and PCs)
- Grouping by main conditions of use
 - open vs. closed processes,
 - temperature, pressure
 - Other risk factors (aerosol forming)
 - Exposure potential (dermal, inhalation, ingestion)
 - Typical Risk Management Measures
- Results:
 - Use and application table
 - DUCC Table

ATIEL/ATC Use and Application Table

LUBRICANT APPLICATION		ATIEL-ATC LUBRICANT USE GROUP
Family	Specific application	
Engine oils	Passenger car (gasoline & diesel)	B
Industrial oils (hydraulic, compressor, etc)	Hydraulic fluids (general)	B
Metalworking	Quenching fluids (oil based)	D
Metalworking	Soluble oil machining/grinding fluids - concentrate	E
Metalworking	Soluble oil machining/grinding fluids - diluted	F
Metalworking	Corrosion protection - oil based	C
Metalworking	Corrosion protection - water based - diluted	C
Total loss lubrication	Glass release agents	D

ATIEL/ATC Use Groups

ATIEL/ ATC Use Group	Description of Use	Sectors Covered
A	Formulation of lubricant additives, lubricants and greases. Includes material transfers, mixing, large and small scale packing, sampling, maintenance and associated laboratory activities.	Industrial
B	General use of lubricants and greases in vehicles or machinery. Includes filling and draining of containers and enclosed machinery (including engines)	Industrial, Professional, Consumer
C	Use in open systems. Application of lubricant to work pieces or equipment by dipping, brushing or spraying (without exposure to heat), e.g. mould releases, corrosion protection, slideways	Industrial, Professional, Consumer
D	Use of lubricants in open high temperature processes, e.g. quenching fluids, glass release agents	Industrial
E	Handling and dilution of metalworking fluid concentrates	Industrial
F	Use of lubricants in high energy open processes, e.g. in high speed machinery such as metal rolling / forming or metalworking fluids for machining and grinding	Industrial, Professional

ATIEL/ATC Use Groups: DUCC-Table

Code	Short ES title	Short description of process or activity	Use Descriptors							Life Cycle Stage(s)						Exposure Modifier					RMM		Code	
			SU	PROC	PC	PC sub	ERC	SPERC	AC	Manufacture	Formulation	end use			Service Life	duration and frequency (exposure time)	Outdoor		Indoor		Resp. Prot.	Eye prot.		Hand Prot.
												Industrial	Professional	Consumer			w LEV	wo LEV						
B(i)	General industrial use, closed processes	Initial factory fill (Oils) from header tank	SU 3	PROC 9	PC 16, 17, 24	n/a	ERC 4, 7	B(j): ATIEL-ATC SPERC 4.Bi.v1	n/a			x			n/a	Daily 8 hour	No	Yes	Yes	No	No	No		
		Initial factory fill (Oils) from containers		PROC 8b								x			n/a	Daily 1 - 4 8-hour	No	Yes	Yes	No	Yes	Yes		
		Initial factory fill (greases)		PROC 2, 9								x			n/a	Daily 4 - 8 hour	No	No	Yes	No	No	No		
		Use in a closed system		PROC 1								x			n/a	Daily None	Yes	No	Yes	No	No	No		
		Maintenance activities		PROC 8b								x			n/a	Daily 1 - 4 hour	No	No	Yes	No	Yes	Yes		
		Waste Disposal		PROC 8b								x			n/a	Daily <15 mins	No	No	Yes	No	Yes	Yes		
		Material storage		PROC 1, 2								x			n/a	Daily 8 hours	Yes	Closed	Closed	No	No	No		
B(p)	General professional use, closed processes	Use as a lubricant/grease in a closed system	SU 22	PROC 1	PC 16, 17, 24	n/a	ERC 9a, 9b	B(p): ATIEL-ATC SPERC 9.Bp.v1	n/a				x		n/a	Daily None	Yes	No	Yes	No	No	No		
		General exposure during maintenance work including draining, refilling.		PROC 8a, 8b, 20								x			n/a	Daily 1 - 4 hour	Yes	No	Yes	No	Yes	Yes		
		Disposal of waste product & used containers		PROC 8a, 8b								x			n/a	Daily <15 mins	Yes	No	Yes	No	Yes	Yes		
		Material storage		PROC 1, 2								x			n/a	Daily 8 hours	Yes	Closed	Closed	No	No	No		
B(c)	General consumer use, closed processes	Use as a lubricant in a closed system, including filling, draining and maintenance	SU 21	n/a	PC 24	n/a	ERC 9a, 9b	B(c): ATIEL-ATC SPERC 9.Bc.v1	n/a					x	n/a	Weekly or less <15 mins	Yes	No	Yes	No	No	No	B (c)	

Human Health Contributing Scenarios

- Typical compositions and hazard classifications of products identified for each ATIEL Use Group
- Boundary conditions described using control banding approaches and key Risk Determining Substances as the reference point
 - e.g. concentration of the relevant hazardous substances, definition of exposure reference values
- CSAs conducted for each ATIEL Use Group supported by typical OCs and RMMs mapped in the DUCG table and Boundary Conditions
 - using ECETOC TRA for exposure estimates and CEFIC Worker CSA Template
- GES narratives developed from CSAs using standard phrases

Environmental Contributing Scenarios

- Information gathered from Members:
 - Potential Risk Determining Substances (RDS)
 - Typical use rates
 - Exposure (Emission) data
 - Typical OCs and RMMs used
- Obtained volume data for lubricants' supply chain
- Developed SpERCs (Specific Environmental Release Categories) for industrial and professional use groups

Environmental Contributing Scenarios

- Generic RDSs

- RDSs made generic by describing each as a set of key properties:
 - Kow, vapour pressure, biodegradability and PNEC_{FW aqua}
- Generic cut-off points determined for each property
- 40 different profiles created, identified by RDS code

RDS code assigned on basis of four substance characteristics

Four substance parameters to determine RDS code				RDS Code
log Kow	VP (pa)	Biodegradability	PNEC mg/l	
<5	<1	Readily biodegradable	0.00001 ≤ - <0.0001	1.1
<5	<1	Readily biodegradable	0.0001 ≤ - <0.001	1.2
<5	<1	Readily biodegradable	0.001 ≤ - <0.01	1.3
TriPP, CAS 115-86-6, EC 204-112-2				1.3.1
<5	<1	Readily biodegradable	0.01 ≤ - <0.1	1.4
<5	<1	Readily biodegradable	0.1 ≤ - <1.0	1.5
<5	<1	Not biodegradable	0.00001 ≤ - <0.0001	2.1
<5	<1	Not biodegradable	0.0001 ≤ - <0.001	2.2

RDS codes assigned according to key parameters

Environmental Contributing Scenarios

- Generic Safety Assessments
 - Safety Assessments carried out for all RDS codes and lubricant use groups using ECETOC TRA tool
 - Inputs into TRA:
 - Release fractions
 - Volumes
 - Worst case properties within each RDS code
 - Output from TRA:
 - Msafe values - maximum amount that can be used safely under given conditions
 - Removal efficiencies

Environmental Contributing Scenarios

- GES compilation
 - TRA inputs and outputs provided as look-up tables
 - GES values selected from tables according to RDS code and lubricant use group
 - Values inserted alongside relevant OC/RMM standard phrases to create the GES

Release fractions (RF) to three environmental compartments for different use groups: WASTE WATER

RDS Code	ATIEL ATC Use group Release Fraction (RF) to water from process (after ty								
	Ai-add pack	Ai-lubes	Bi	Bp	Bc	Ci	Cp	Cc	Di
1.1	2.00E-10	2.00E-11	2.00E-11	5.00E-04	5.00E-04	2.00E-11	5.00E-04	5.00E-04	
1.2	2.00E-10	2.00E-11	2.00E-11	5.00E-04	5.00E-04	2.00E-11	5.00E-04	5.00E-04	
1.3	2.00E-10	2.00E-11	2.00E-11	5.0					
1.3.1	1E-10	1E-11	1E-11	5.0					
1.4	2.00E-10	2.00E-11	2.00E-11	5.0					
1.5	2.00E-10	2.00E-11	2.00E-11	5.0					

Example Input Table

Example Output Table

Msafe values for generic products for different use groups at the product level using a treat rate of 2% except f

RDS Code	ATIEL ATC Use group Msafe (kg day-1)								
	Ai-add pack	Ai-lubes	Bi	Bp	Bc	Ci	Cp	Cc	Di
1.1	66879	6694	1963	19	8	294.4	3	0.3	
1.2	668792	66942	19627	191	79	2944	28	3	
1.3	6687917	669420	196269	1911	793	29439	283	33	
1.3.1	485294116	1201229490	67209667	29351	9835	9729484	4873	3453	
1.4	66879165	6694195	1962694	19107	7934	294390	2835	325	
1.5	668791651	66941950	19626944	191071	79341	2943899	28348	3253	
2.1	33393	3343	1185	13	4	174	2	0.2	
2.2	333925	33425	11854	134	39	1737	15	2	

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If the raw material ext-SDS is not consistent with the GES: follow options outlined in the guidance Document 9

STEP 7

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Application to products

- Allocate Lubricants to ATIEL/ATC use groups
 - Use & application table
 - DUCC Table
- Check if product meets boundary conditions for Human Health and Environment
 - Classification (R-phrases)
 - Concentration range of Risk Determining Substances (RDS)
 - Key parameters and reference values
- Attach GES to Product SDS for each required use group
 - Classified products
 - Recommended for products not classified, but containing hazardous constituents
 - Not required for unclassified products not containing any hazardous constituents

Health boundary conditions matrix

- Screening (to check HH GES is applicable)

Row Number	Criteria / Boundary Condition	
		B: General use in vehicles or machinery B(i) - Industrial B(p) - Professional
1	Product Classification & Labelling (C&L) covered by one or more of the listed R phrases (DPD human health):	R43 R36; R41 R37 R38; R21 R20 R65; R66; R22 (see Note 1) Not classified
2	For products classified as R43 (skin sensitiser), sensitising component is within the listed concentration range:	Skin sensitiser (see Note 2) a) $\geq 0.1 - 1\%$ Strong b) $\geq 1 - 3\%$ Weak or Moderate

Check GES is a good fit for the product:

- Use title
- C&L of mixture
- Concentration of skin sensitisers in mixture (if relevant)

Compiled GES template

Section 2.2		Control of environmental exposure
Amounts used		
EU tonnage (tonnes per year) [ATE09]	<i>insert value from Environmental GES values table</i>	
Fraction of EU tonnage used in region [A1]	0.1	
Fraction of Regional tonnage used locally [A3]	0.1	
Frequency and duration of use		
Emission days (days/year) [FD4]	300	
Environmental factors not influenced by risk management		
Local freshwater dilution factor [EF1]	10	
Local marine water dilution factor [EF2]	100	
Other given operational conditions affecting environmental exposure		
Negligible wastewater emissions as process operates without water contact. [OOC20]		
Release fraction to air from process (after typical onsite RMMs) [ATE11]	5.0 E-05	
Release fraction to wastewater from process (after typical onsite RMMs and before (municipal) sewage treatment plant): [ATE12]	<i>insert value from Environmental GES values table</i>	
Release fraction to soil from process (after typical onsite RMMs): [ATE13]	0	
Technical conditions and measures at process level (source) to prevent release		
Common practices vary across sites thus conservative process release estimates used [TCS1]		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		
Treat air emission to provide a typical removal efficiency of (%):	70	
Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14]		
User sites are assumed to be provided with oil/water separators or equivalent and for waste water to be discharged via public sewer system. [ATE14]		
Organisational measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2].		
Sludge should be incinerated, contained or reclaimed [OMS3].		
Conditions and measures related to municipal sewage treatment plant		
Estimated substance removal from wastewater via domestic sewage treatment (%) - F_{STP} [STP3]	<i>insert value from Environmental GES values table</i>	
Assumed domestic sewage treatment plant flow (m ³ /d) [STP5]	2.00E+03	
Maximum allowable site quantity (MSafe) based on OCs and RMMs as at level (kg/day): [ATE15]	<i>insert value from Environmental GES values table</i>	
Conditions and measures related to external treatment of waste for disposal		
External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3].		
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]		

Pre-filled fields

Data from look-up tables

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Consistency Check for incoming Raw Materials

- Allocate Raw Materials to ATIEL/ATC use groups
 - Accumulate use groups of all related products to RM
- Compare RM ES with relevant GES
 - Exposure Potential
 - Operational conditions
 - Risk Management Measures
- Conduct consistency Check for Human Health and Environment using certain key parameter
 - If RM is consistent, no further action required
 - If RM is not consistent, check scaling options
- Consult ATIEL/ATC guidance for other options
- If other options are not applicable, conduct Downstream User Chemical Safety Assessment

Health boundary conditions matrix

- Detailed (to confirm component ES within the

GES boundary

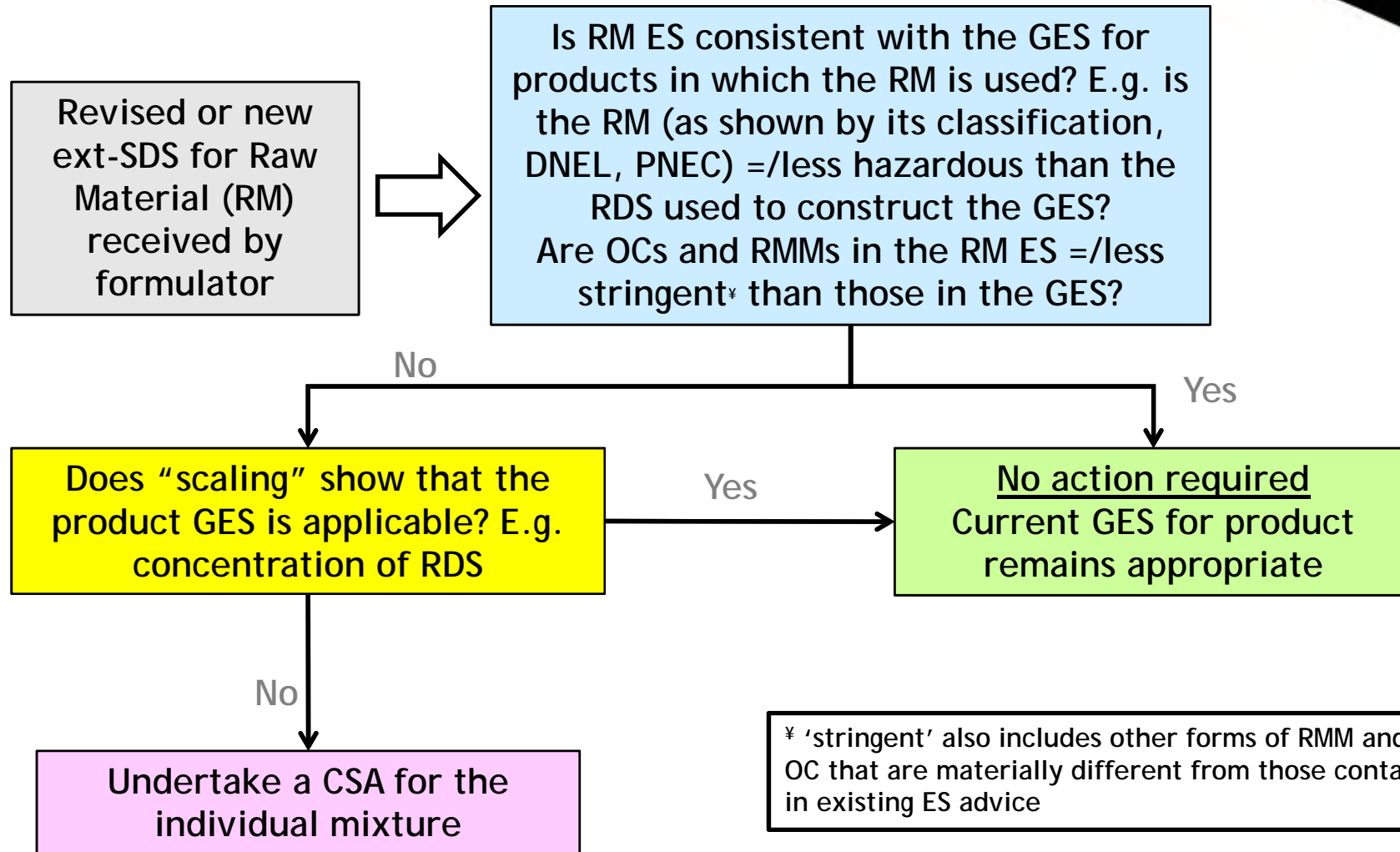
Row Number	Criteria / Boundary Condition	B: General use in vehicles or machinery B(i) - Industrial B(p) - Professional
3	Boundary concentration of health Risk Determining Substance(s) in mixture/formulation	Skin sensitisers: ≤ 1% of strong sensitiser ≤ 3% of weak/moderate sensitiser Other hazardous components except CMRs: a) ≤ 25% (industrial) * b) ≤ 5% (professional) * * Based on generic 'vapour' and 'dermal' RV (see Row 4 (i) and (ii)) c) Other boundary conditions may be valid, if component OCs and RMMs are equal or less stringent than included in the GES.
4	Boundary Reference Value (RV), long term (8 hour) dermal and inhalation for health Risk Determining Substance(s)	(i) RV inhalation vapour: ≥ 5ppm OR Vapour Pressure ≤ 0.01 Pa. (ii) RV dermal: ≥ 0.5 mg/kg bw/day

Boundary concentration:

1. Skin sensitisers, if relevant
2. Other hazardous components with defined concentrations (ind/prof) (except CMRs)
3. Other, if component OCs/RMMs equal or less stringent

Boundary reference value:
- inhalation and dermal

Consistency check overview substance ext-SDS/ES vs.GES



Key information requirements for Downstream Users

GENERAL

- Understanding of the intended use of product
 - GES titles supported by simple explanatory statements

HEALTH

- Check that your own conditions of use (OCs and RMMs) are within the boundary of the communicated ES
 - Contributing Scenarios and associated PROCs

ENVIRONMENT

- Check that the communicated RMMs (or equivalent) are in use
- Check that your DU use rate of a product (kg/day) is less than Msafe value found on the ES

Advantages of ATIEL ATC GES Approach

- Delivers sound, understandable advice to DUs now
 - No need to wait until 2018 Registrations for key information
- Enables formulators to provide useful safe use advice in a consistent manner to their customers
- Constrains the length of the ext-SDS to a manageable size
- Complements the nature of SH&E advice already being offered by lubricant suppliers e.g. technical advisory notes
- GESs are inherently conservative but not unrealistic
- Process can accommodate a wide range of components and formulations

Roll out plan and documentation

- GES and supporting documentation now available via ATIEL web site
 - Guide to user document, GES narratives, Boundary condition matrix, SpERC documentation, Compliance flow charts etc.
 - Free of charge for members and non members alike
- New GES phrases to be incorporated into Cefic ESCom Phrase library
 - Translations and metadata funded by ATIEL
- Website help
 - Supporting documents; FAQs, on-line help
- Workshop for members
 - Depending on demand
- Further challenges
 - Translation of key documents into European languages
 - Training and initial support for formulators in applying the approach that have not been directly involved in the development

<http://atiel.org/>

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DRIVING STANDARDS
 IN LUBRICANT TECHNOLOGY

The technical association of the European lubricants industry

NEW: Code of Practice Issue 19

ATIEL has introduced a new version of its Code of Practice, Issue 19, to bring it into line with the latest ACEA 2012 Oil Sequences - read more.

Generic Exposure Scenarios

ATIEL and ATC (Additives Technical Committee) have developed Generic Exposure Scenarios and guidance documents to help lubricants companies comply with REACH - read more.

Industry News

- > PRESS RELEASE: New ACEA Secretary General takes up office
- > COMMERCIAL VEHICLE registrations: - 5.5% over eight months; -4.4% in August
- > August Petroleum Demand Continues Trend as Production & Exports Rise, Imports Fall
- > API: KXL how much longer will Americans wait for jobs and energy security?
- > API outlines RFS "reality gap" in analysis for Congress
- > PASSENGER CAR registrations: -5.2% over eight months; -5.0% in August

Role of the ATIEL Code of Practice

Read the presentation by Adri van de Ven & Peter Tjan to the UNITI Mineral Oil Technology Congress, Stuttgart, April 2013.

ACEA 2012 Oil Sequences

ACEA has launched its European Oil Sequences 2012, with specific measures to address the increasing use of biofuels - read more.

🏠
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Info for End Users
About exposure scenarios
FAQs

REACH: Introduction

NOTE: Before using any of the information on this website please read the [disclaimer](#).

The information and resources on this website are organised according to your position in the lubricants supply chain (see chart below). Depending on your interest, please follow the main drop down menu or use the appropriate link(s) below:

- **Supplier of base oils or lubricant additive substances**
- **Formulator of lubricant additives and lubricant mixtures**
- **End user of lubricant products**

Background

The lubricants, metal working fluids and grease industry sectors (represented by ATIEL, UEIL and ELGI) along with lubricant additive suppliers (represented by ATC) have worked together to develop a process for supporting the communication of the safe use of their products under REACH. This work, coordinated by the ATIEL/ATC REACH Working Group, includes the identification of use information and development of generic exposure scenarios (GES) for common lubricant end uses.

The objective of the GES is to offer everyone in the lubricants supply chain (right) a standardised format for their exposure scenarios and common

TYPICAL LUBRICANT SUPPLY CHAIN

SUPPLIER	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid #ccc; background-color: #fff; padding: 2px 5px;">PRODUCTION OF BASE OIL</div> <div style="border: 1px solid #ccc; background-color: #fff; padding: 2px 5px;">PRODUCTION OF ADDITIVES</div> </div>
FORMULATOR	<div style="display: flex; justify-content: center; align-items: center;"> <div style="margin-right: 10px;"> <p>↓</p><p>↓</p><p>↓</p><p>↓</p> </div> <div style="border: 1px solid #ccc; background-color: #fff; padding: 2px 5px;">FORMULATION OF ADDITIVE PACKAGE</div> </div>
	<div style="display: flex; justify-content: center; align-items: center;"> <div style="margin-right: 10px;"> <p>↓</p><p>↓</p><p>↓</p> </div> <div style="border: 1px solid #ccc; background-color: #fff; padding: 2px 5px;">BLENDING, STORAGE & TRANSPORT OF LUBRICANT</div> </div>

Overview of Use Communication

This document provides simplified guidance to identified use communication in the lubricants supply chain - [click here](#).

This document is also available in a number of EU languages - [click here](#).

REACH: Useful links

European Chemicals Agency (ECHA)
European Chemical Industry Council (CEFIC)
European Centre for Ecotoxicology & Toxicology of Chemicals (ECETOC)
Downstream Users of Chemicals Coordination (DUCC) group

Specific Environmental Release Categories (SpERCs) Factsheets

↓ ATIEL/ATC has developed 'Specific Environmental Release Categories' (SpERCs) Factsheets that reflect actual conditions of use for applications of lubricants. You can download the SpERCs Factsheets [here](#)

REACH Acronyms & Glossary

↓ List of REACH acronyms commonly used on this website.

Summary

- Why and how were the ATIEL ATC GESs developed for lubricating products
- How can the GESs be applied by formulators
- How to perform a consistency check for incoming Raw Materials
- Which information is required to check whether a Downstream User use is covered by a GES or not
- Advantages of the ATIEL ATC Approach
- Roll out plan
- Link, where to find the complete documentation

Thank you for your attention !

Backup

The challenges to be addressed

- Existing DU Guidance envisages
 - Detailed analysis of ext-SDS/ES for each hazardous substance
 - Evaluation of individual mixtures (some formulators make thousands)
- Drawbacks
 - Likely inconsistency between ESs of received substances
 - Incorrect assumptions made by registrants about emissions
 - Trickle down of information until 2018 and beyond
 - Significant churn of information placing massive burden on formulators
- What is required?

Process for covering most (ca. 90%) of mixtures which:

 - is practical, science based, understandable to SMEs,
 - reflects the finished mixture today rather than wait for 2018
 - is efficient, and capable of being processed within companies' IT systems (both larger companies and SMEs)
- Customers want simple, relevant, understandable advice
 - That builds on prevailing exposure/risk control practices and
 - Reduces unnecessary complication for customers

The ATIEL-ATC Approach

