

Conference Lubricant Expo

Environmental aspects of importance for lubricants producers

September, 17 2024

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Agenda

- 1 Environmental effects from identified and special hazards from lubricant substance or mixture, environmental precautions
- 2 Chemical conformity and waste management
- 3 Ways of reduction for lubricant's environmental impact
- 4 Future trends and perspectives

Environmental effects from identified and special hazards from lubricant substance or mixture, environmental precautions

Three major aspects of the environmental aspects of lubricants can be addressed:

- a) control, via engineering to minimize losses
- b) minimizing the impact of these losses
- c) efficient collection and treatment of waste materials

In particular lubricant producers and companies can be affected by points c) and can affect b).

Collection of Waste Lubricants



Disposal of waste lubricant as a fuel



Disposal as a waste



Re-refining process/
Use of re-refined base oils

Environmental Impacts of consumed lubricants

Constant, Low Level Inputs

Research on measurements of environmental impact of roadway run-off from a major UK motorway. The results of the studies showed the minimal effect on the environment of the run-off.

Large Scale, 'catastrophic' inputs

Hydrocarbon contamination, efforts for clean-up and their effectiveness
Environmental degradation of lubricating oils
Development of biodegradable lubricants

Biodegradation tests for oils

Mainly for use with single chemical species that have a demonstrable water solubility
Oils and oil products are mixtures of hundreds, sometimes thousands, of different chemicals which usually have low water solubilities.
The differences between the commonly used test methods and the difficulties of applying these methods to oil products

Identified and special hazards from lubricant substance or mixture

Safety Data Sheets and GHS label elements on hazards



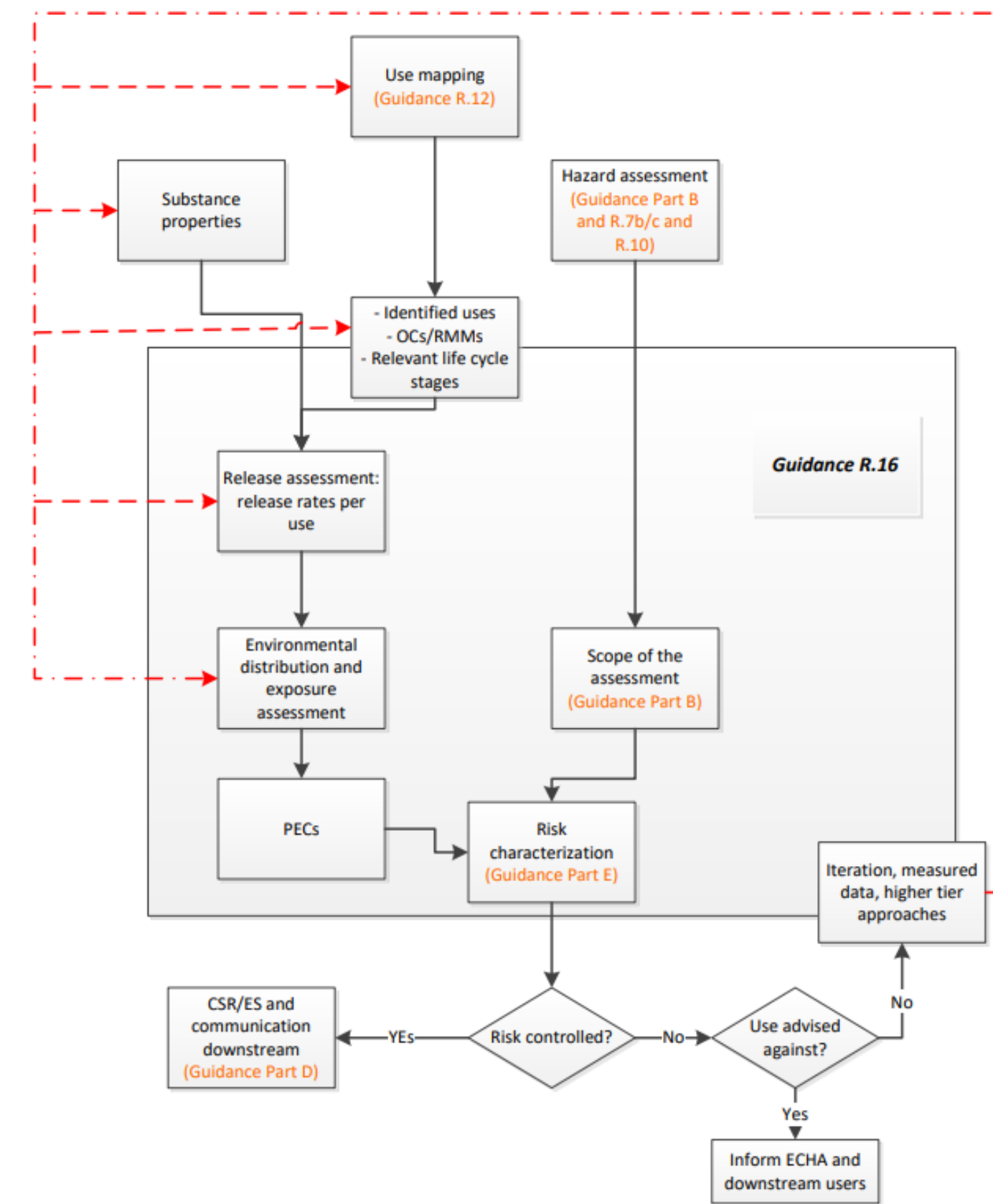
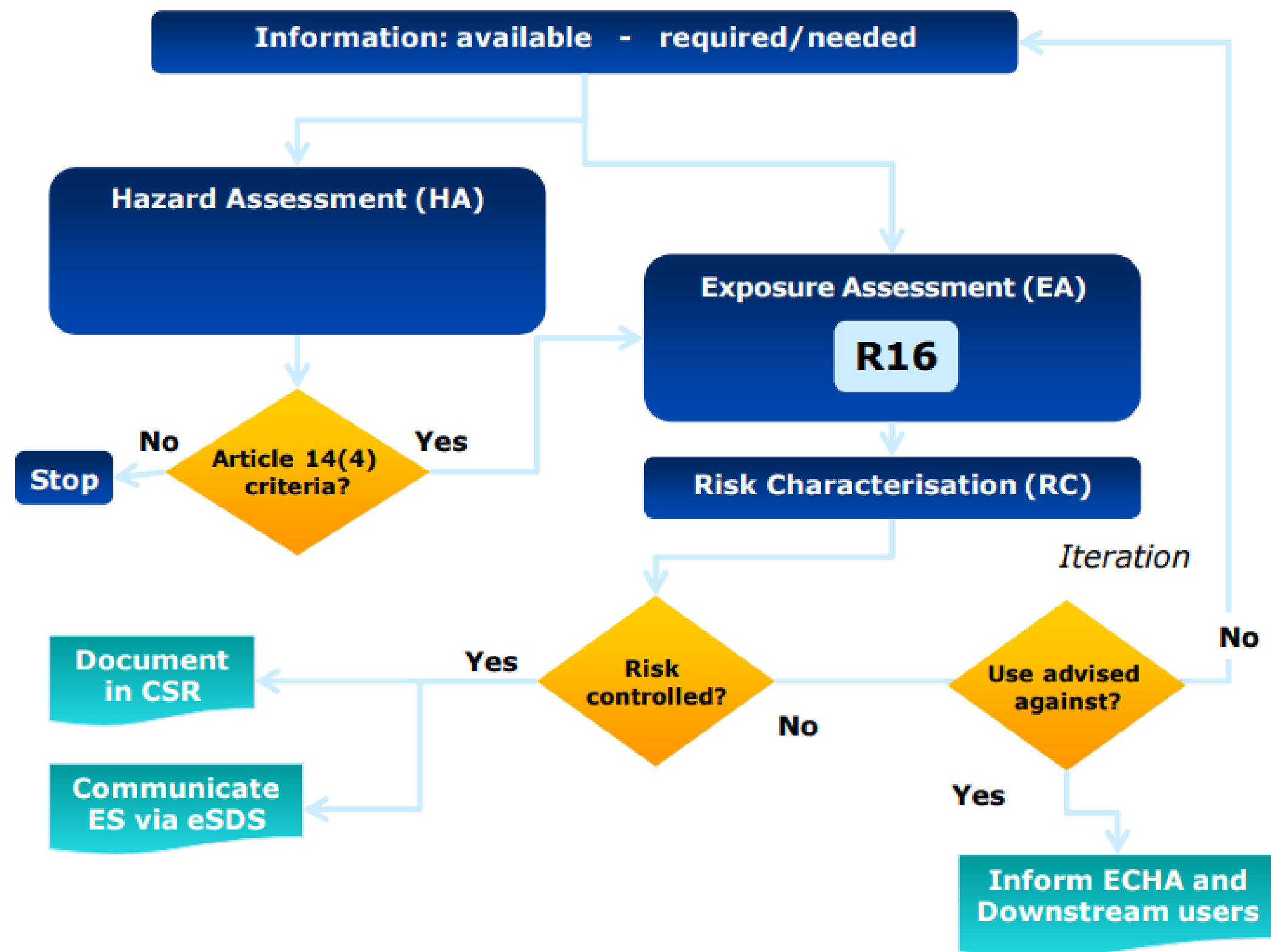
- GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)
- GHS label elements
- Signal words
- Hazard statements
- Precautionary statements:
 - Prevention
 - Response
 - Storage
 - Disposal

Storage and handling Environmental risks



- 3 C's Rule:
 - Contamination: avoid contamination of products
 - Confusion: prevent confusion regarding the products and its appropriate usage
 - Containment: provide containment to avoid environmental pollution
- Effects on body surface, skin
- Effects on respiratory system
- Environmental effects

Hazards and environmental risks assessments flows



Chemical conformity and waste management

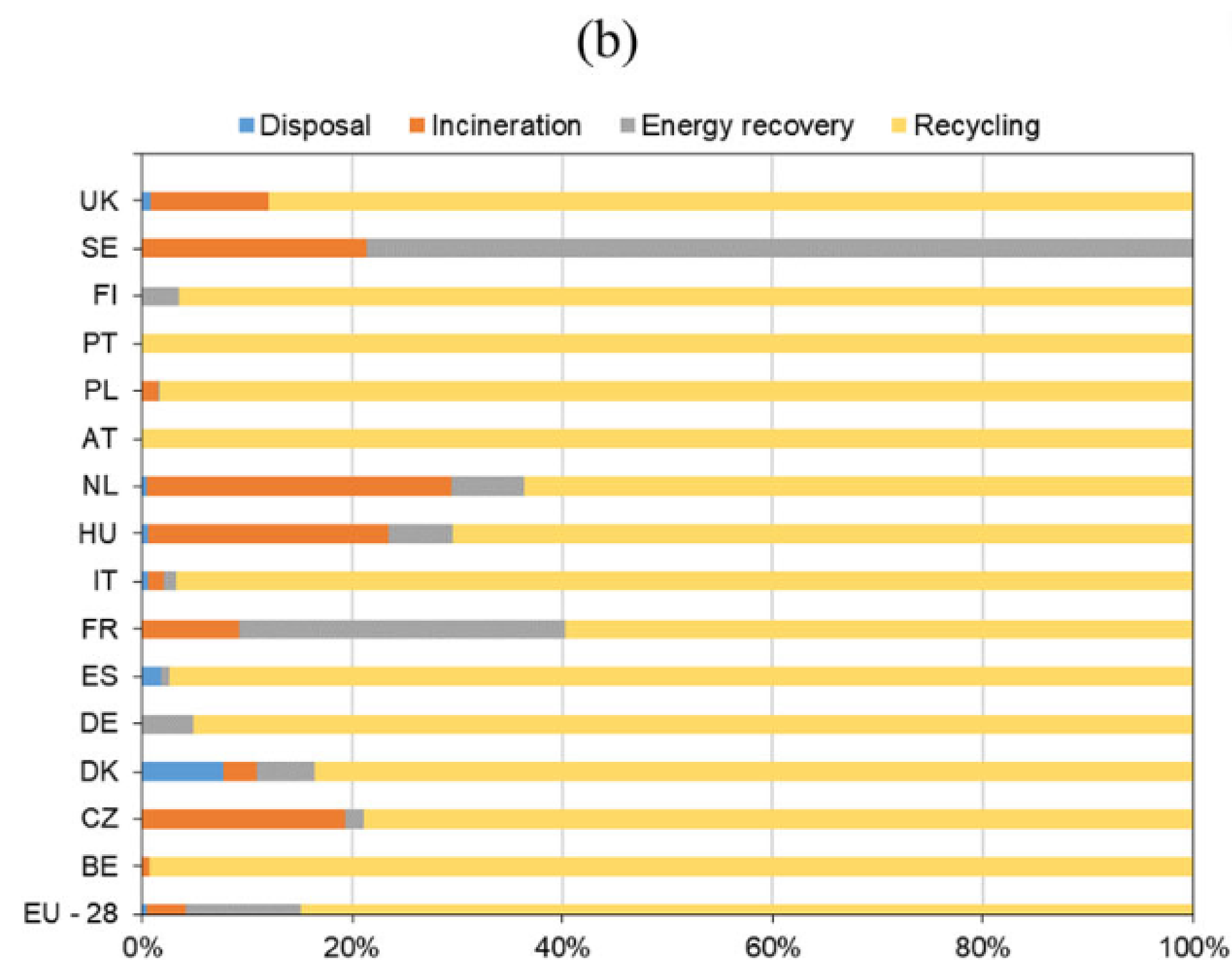
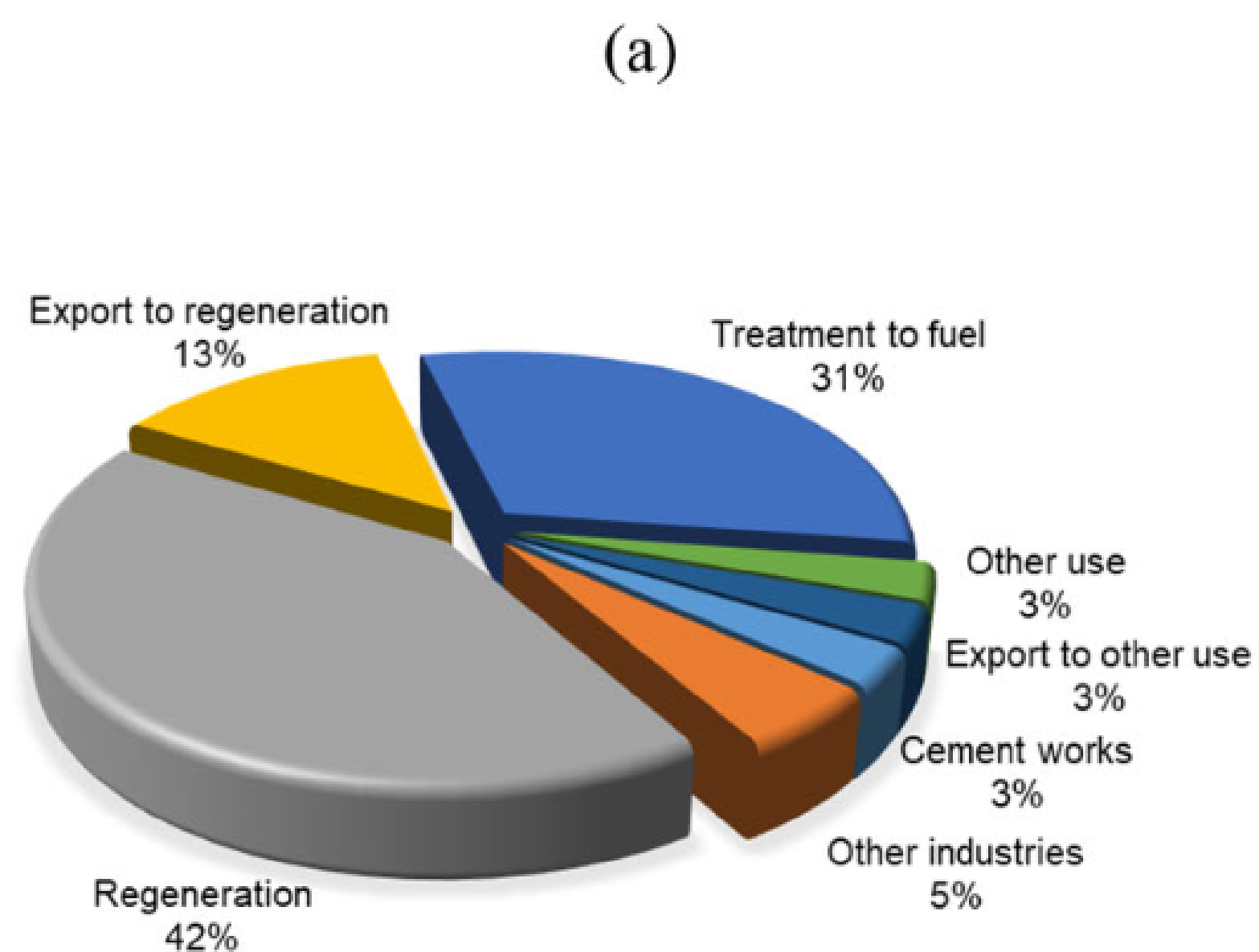
Chemical conformity

- Test performance
- Declaration of chemical conformity
REACH declarations, conformity to Art. 33 of REACH regulation, allergen free confirmation if required)
- Notification process (ECHA), dossiers
- Safety data sheets
- Safety assessments based of purpose of use
- Regulatory context reviews
- Markings and labeling



Chemical conformity and waste management

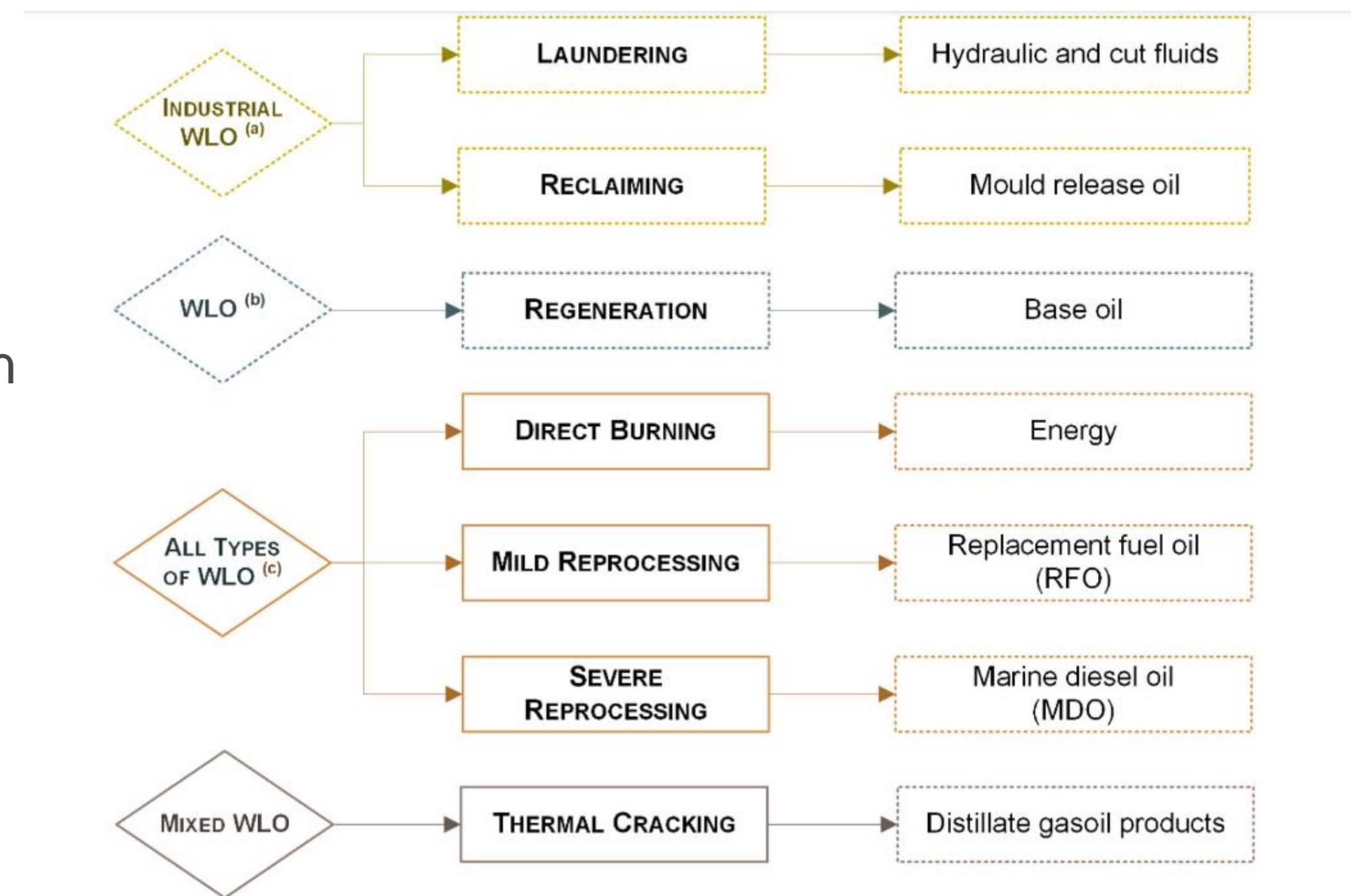
Waste management



Chemical conformity and waste management

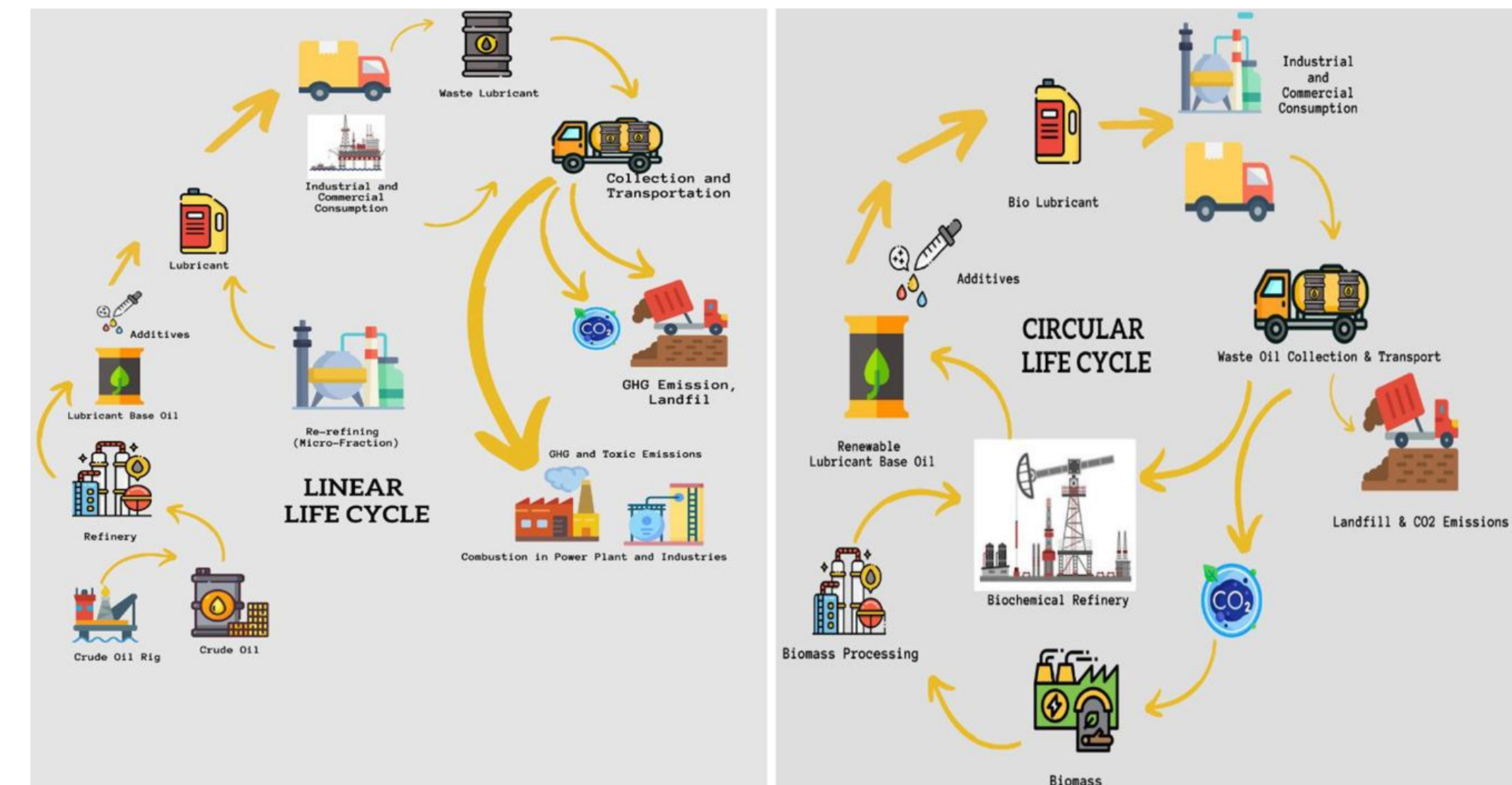
Waste management

- Treatment and disposal based on local regulation
- Conformity with requirements of Directive 2008/98/EC, recycling refers to “any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes“
- The EU regulations clearly identify the preference for regeneration over other forms of recycling/recovery. In fact, Directive (EU) 2018/851 states that the Commission should propose measures to expand regeneration, and that attention should be paid to the quality and final use of the regenerated and recycled products
- Industrial lubricants: closed loop treatment
- Consider GHGs impact by choosing waste management concept
- Life cycle assessments considering best environmental performance



Ways of reduction of lubricants environmental impact

- Implementation of **sustainable practices** to minimise pollution and maximise the use of resources
- Lubricants **Audit**
- **Work ad collaborate with suppliers** who specialize in eco-friendly options for guidance
- **Training** on proper use and disposal
- **Monitor and measure** Regularly monitor the performance of your lubricants and measure their impact on equipment lifespan, energy efficiency, and environmental footprint
- **Control of risks** (health and safety, environmental, chemical etc.) by performing periodical risk analysis
- **Receipts, mixtures and components:** research and development on eco-friendly and/or biogradable concepts for 'green' lubricants
- **Life-cycle assessments** (current state vs. modified components, mixtures, sustainable concepts, biodegradability and regeneration)



Future trends and perspectives

Reduction of unauthorized disposal

The largest proportion of lubricant enters the environment by virtue of its being used. Legislation has been introduced to reduce unauthorized disposal

Development of additive components

It is possible to utilize vegetable oils in long use applications but the antioxidation protection needed is thus far excessive; however, the future utilization of the double bond to attach performance molecules to the base oil itself must be a long-term possibility.

Identification of the most environmentally acceptable components and products

Driven by legislation, REACH regulation.

Promotion the replacement of materials that are persistent, bioaccumulative or toxic by less harmful alternatives and chemicals exist at present, there must be research to identify less harmful alternatives

Future trends and perspectives

EU ecolabeling of lubricants

EU ecolabelling scheme that covers lubricants and it is possible to apply for the following products: hydraulic fluids, greases, chainsaw oils, two-stroke oils, concrete release agents and other total loss lubricants. The criteria for gaining the label are based on the low toxicity and biodegradability of the components as well as a requirement that the product is 'fit for purpose'

Performance of components and products

Performance of components and products may be a major factor in contributing to environmental impact

Compliance

REACH Regulation, EU Waste Oil Directive and derived national regulations

There will be a need for increasingly advanced lubricants and hence lubricant additives, they will be required to operate in harsher conditions, more effectively than in the past, and there will be no allowances made in the approval process for adverse health or environmental effects

Thank you for attention

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