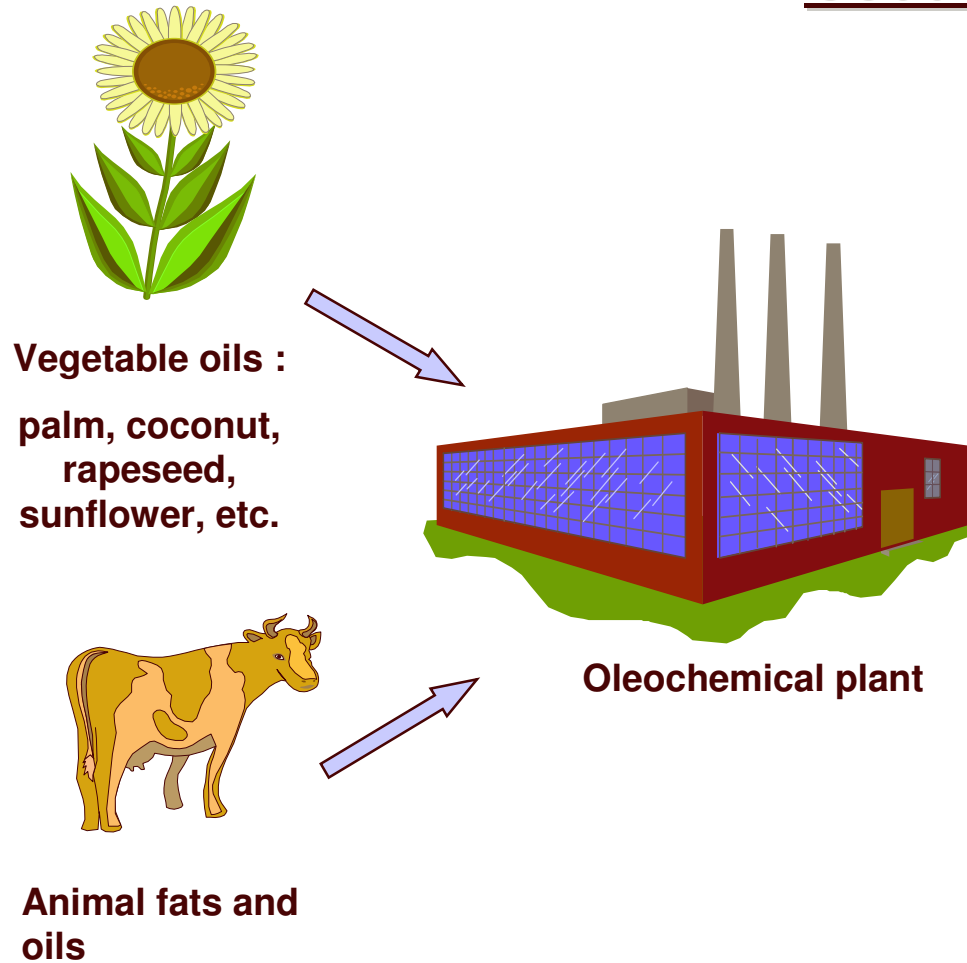


THE PRODUCTION OF OLEOCHEMICALS



Used in :

Soap & detergents

Chemical synthesis

Food & Feed additives

Cosmetics

Pharmaceuticals

Paints

Textile products

Polymer additives

Rubber additives

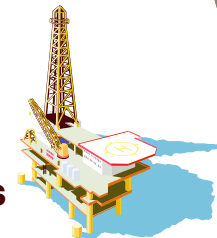
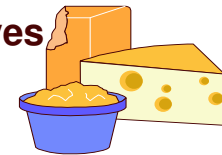
Paper additives

Agrochemicals

Fuel additives

Lubricants

Offshore chemicals

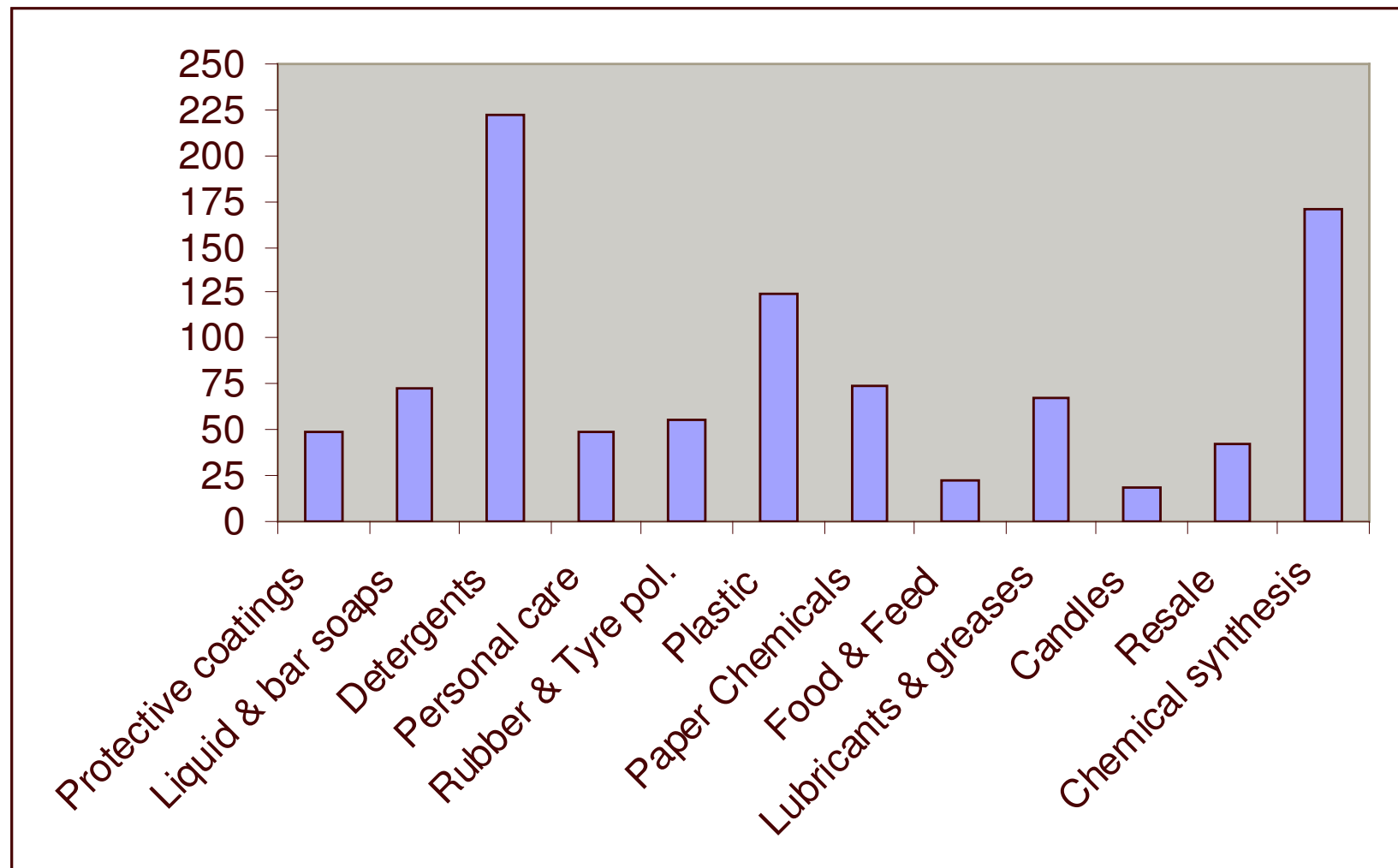


MARKET FOR OLEOCHEMICALS IN EUROPE (000 / tons)

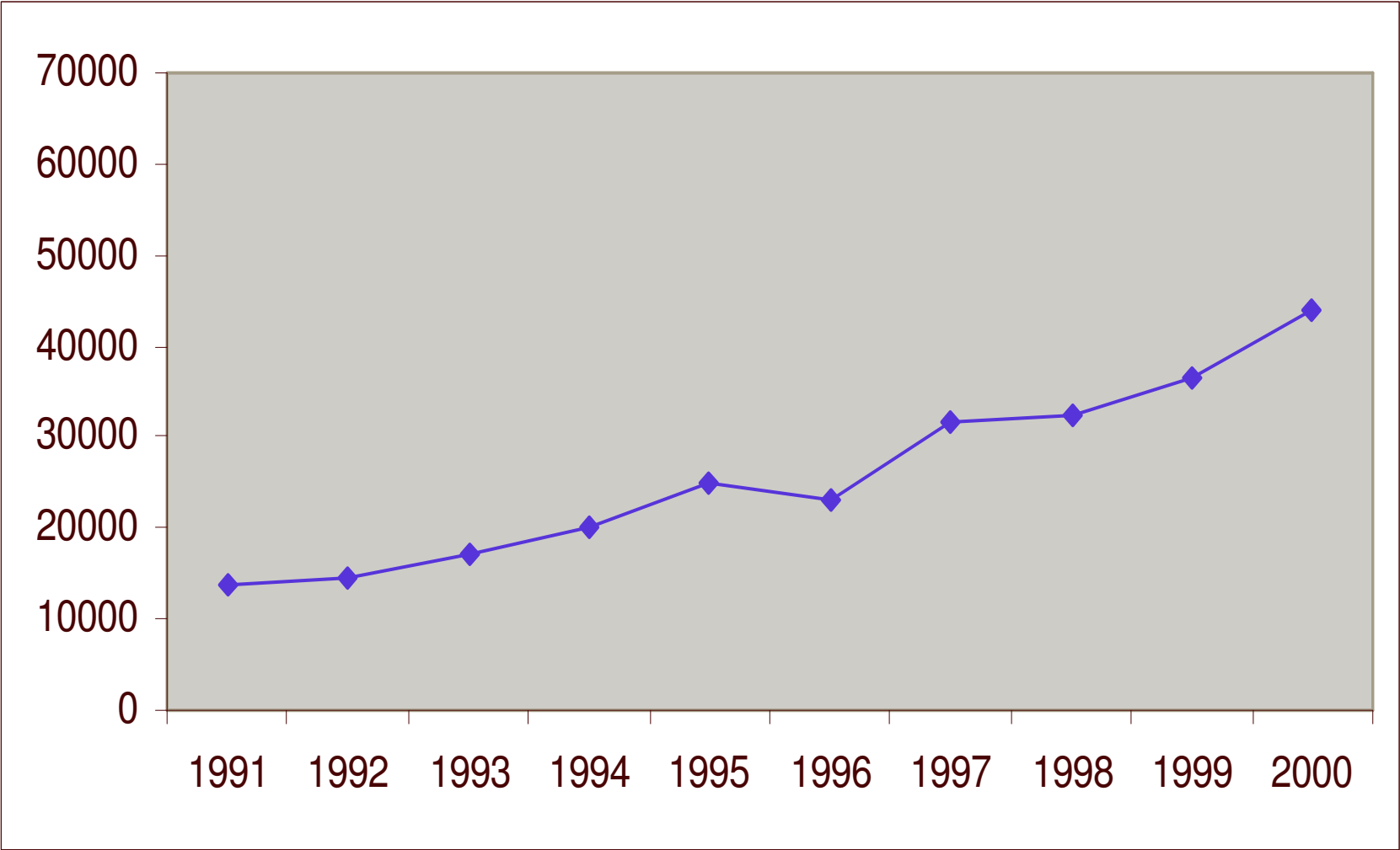
	1990	2000	2005	Av. growth
Fatty acids	1000	1200	1355	2,5%
Fatty alcohols		(680)		
Fatty esters	183	312	398	5%
Lube esters	30	61	87	> 7%
Solvent replacers	-	6	15	> 20%



MARKET PER APPLICATION 1999 (APAG)



ESTER SALES



THE HENKEL PROSPECT - 2005

These figures were communicated by Henkel to Onidol. We are not aware of the assumptions made to reach them. The global result is an increase of about 0,5 Mo tons in the consumption of European oils within 2005.

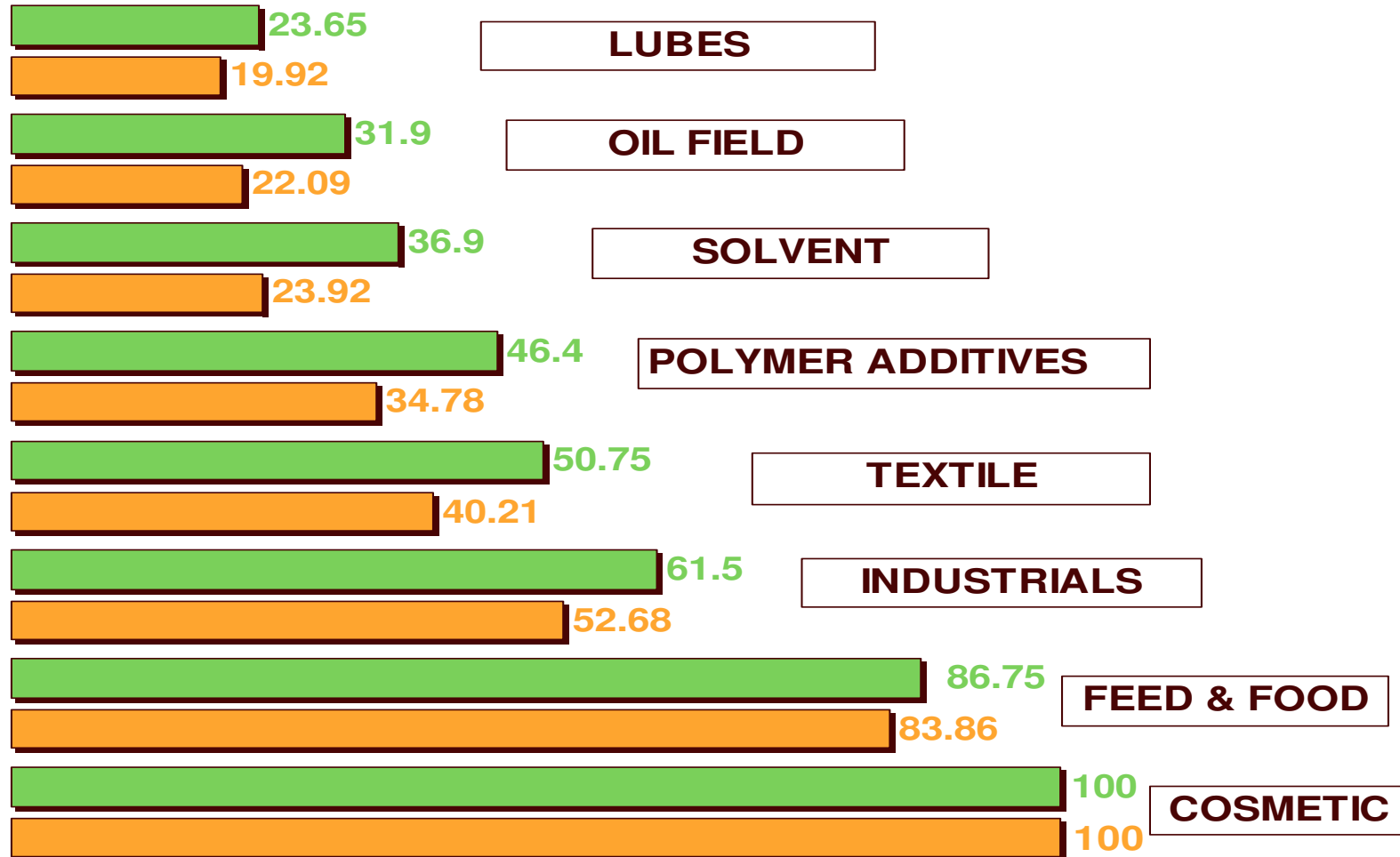
Source: Oléagineux Corps gras Lipides (vol. 6 nr. 5) - Sylvain Claude - Onidol



ESTERS MARKET PER APPLICATION

276.000 T - 1997

400.000 T - 2005

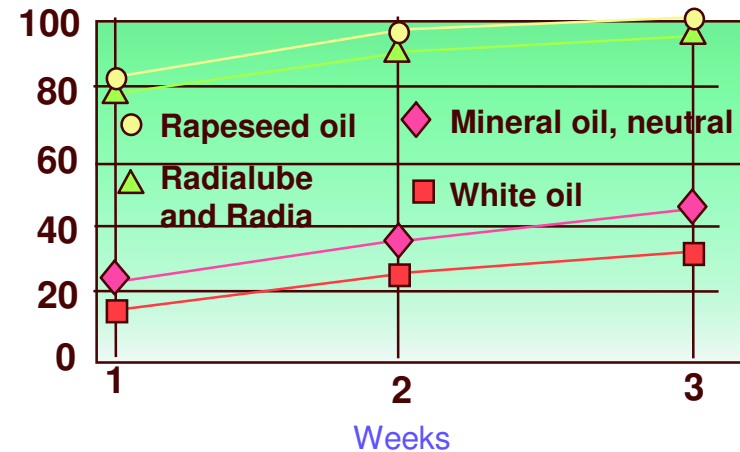


OLEOCHEMICALS : KEY ADVANTAGES

High efficiency
Tailor Made Chemistry
Renewable resources
Biodegradability
Non-toxic

**EFFICIENCY +
ECOLOGY**

% biodegradability (CECL 33-A-93)



LUBRICANTS AND LUBRICANT ADDITIVES

- LUBRICANT

- Reduces Friction
- Removes Heat
- Keeps Contaminants Under Control
- Improves Sealing of System
- Reduces Rust and Corrosion
- Transmits Energy

FATTY ESTER

- Viscosity
- Chain length
- Degree of Saturation
- Polarity
- Alcohol type
- Chain type

Important Characteristics for Ester Lubricants

High Lubricity
Oxidation Stability
Hydrolysis Stability Volatility
VI



HEAVY DUTY OIL

- Low viscosity 5W 30
- Fuel consumption -3%
- Approval: Mercedes
Man
Renault
DAF
- Field test: 2 Mio km
- Oil change interval: 80.000 km



PERFORMANCES OF OLEOCHEMICAL ESTERS BASED LUBS

	Hydr.	Comp.	Greas.
• Biodegradability	X	X	X
• Lower skin irritation			X
• Reduced respiratory diseases		X	
• Reduced friction and related wear	X	X	X
• Reduced volatility and flammability	X	X	
• Higher thermal, oxidation and hydrolytic stability	X	X	X
• High Viscosity Index and good low t° flow behaviour	X	X	
• Good solvency, detergency	X	X	
• High shear stability	X	X	
• Water wash-out resistency			X



COMPARISON OF EBS WITH HYDROCARBONS

	Vap. P.	Flash	Arom.	R sentence	Kauri Bu.	Symbols
Radia esters	negl.	> 180 °C	0	-	40 - 120	-
Pentane	430	< -55 °C	-	11		F
Hexane	220	< -60 °C	-	11, 48/20, 65		F, Xn
Methanol	92	10 °C	-	11, 23/25		F, T
Cyclohexane	77	-20 °C	-	11		F
Benzene	76	-11 °C	100	45, 11, 48/23/24/25		F, T
Toluene	22	5 °C	99,8	11, 20	105	F; Xn
Xylene	5	25 °C	99,0	10, 20, 21, 38	97	Xn
Finalan 40	2,5	45 °C	0,3	65	31	Xn
Finalan 75	2,5	77 °C	0,4	65	29	Xn
Finalan 100	2,5	102 °C	tr.	65	30	Xn
Kerosene	3,2	> 60 °C		65	37	Xn
White Spirit	3,5	42 °C	16	10,65	36	Xn

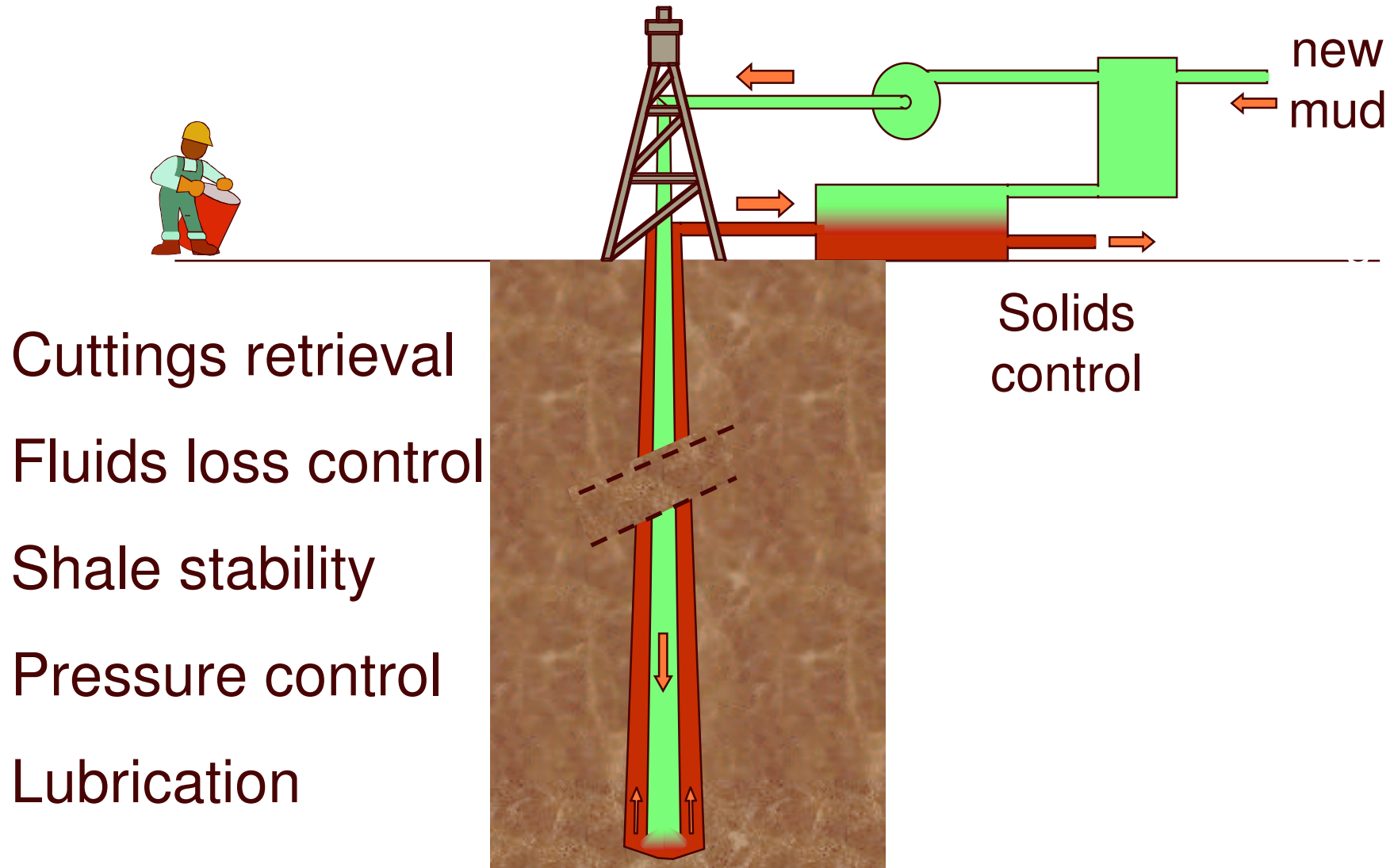


ADVANTAGES OF FATTY ESTERS

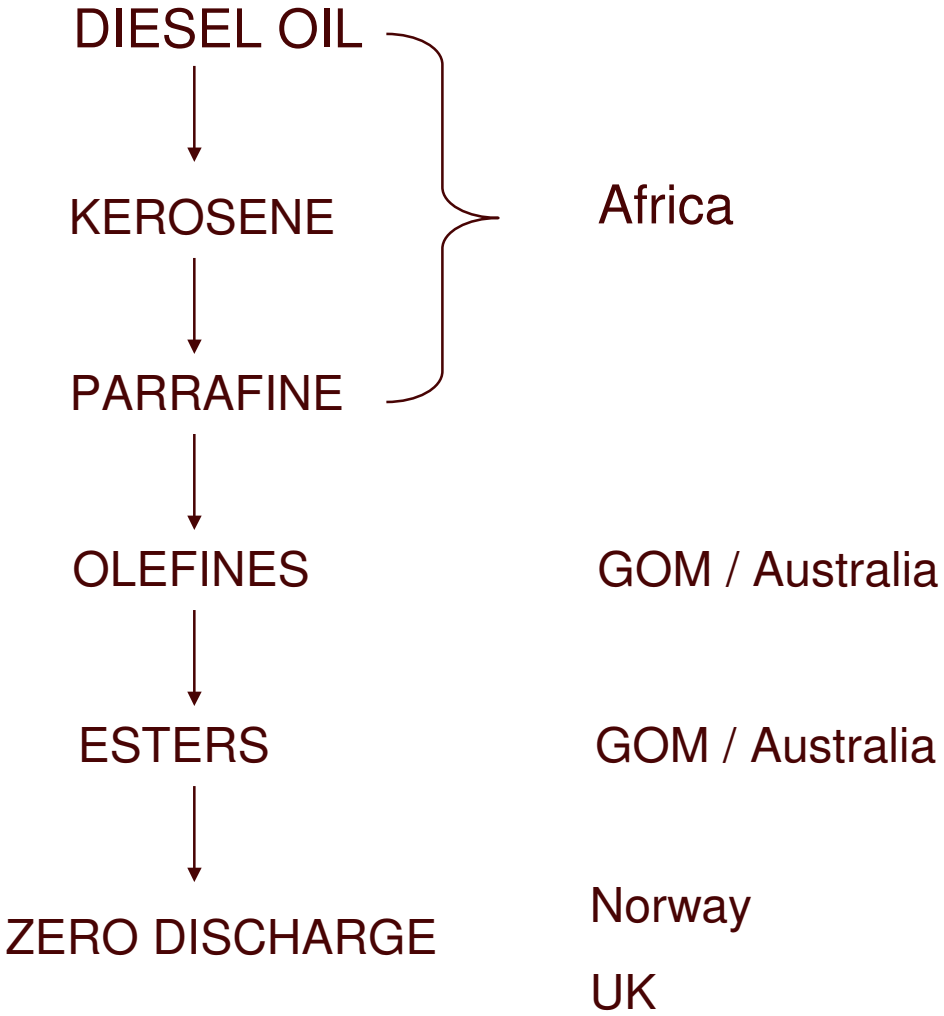
- Performance: high solvency
tailor made physical/chemical
properties
- Storage & handling: low volatility
high flash point
- Health: no OPS (Organo Psycho Syndrome)
LD50 > 2.000 mg/kg
no bioaccumulation
- Environment: biodegradable
no POCP (Photochemical Ozone Creating
Potential)



OLEOCHEMICALS PRODUCT FOR OIL DRILLING MUD



BASE FLUIDS



THE DRIVING FORCES

- Technical evolution and needs for performances
- Environmental awareness
- Harmless (even food) character
- Incentives or regulations



THE RIGHT SOLUTION

	Oleochemistry	Biodiesel
Cost/Performance	OK	? Brent (30 \$) → 250 €/T Rapeseedoil →450 €/T
Glycerine market	OK	Out of balance
Lubricity improver in fuels	5.000 ppm of GMO cost / T fuel: 0.625 €	50.000 ppm of biodiesel cost / T fuel: 2.5 €
Cost to enduser	-	high
Government support needed	min	Important
Reduction of mineral oil use	1 kg VEG = 2 kg MIN OIL	1 kg VEG = 1 kg MIN OIL



THE BARRIERS

- The habits and resistance to change
- The lack of information and demonstration
- The lack of technical evidence on performances
- The higher purchasing price (50 to 250%)
- The economical cost calculation for the user
- Some bad experiences from the past, or still at present!
- Resistance from the oil industry



HOW TO OVERCOME THIS BARRIERS

- Special green distribution network
 - Farmers have to use their own products
 - lubricants
 - solvents
 - adjuvants for pesticides
 -
 -
 - The government must give the good example
 - public companies like public transport
 - on public construction works
- ➡ they must impose the use of environmental friendly products

