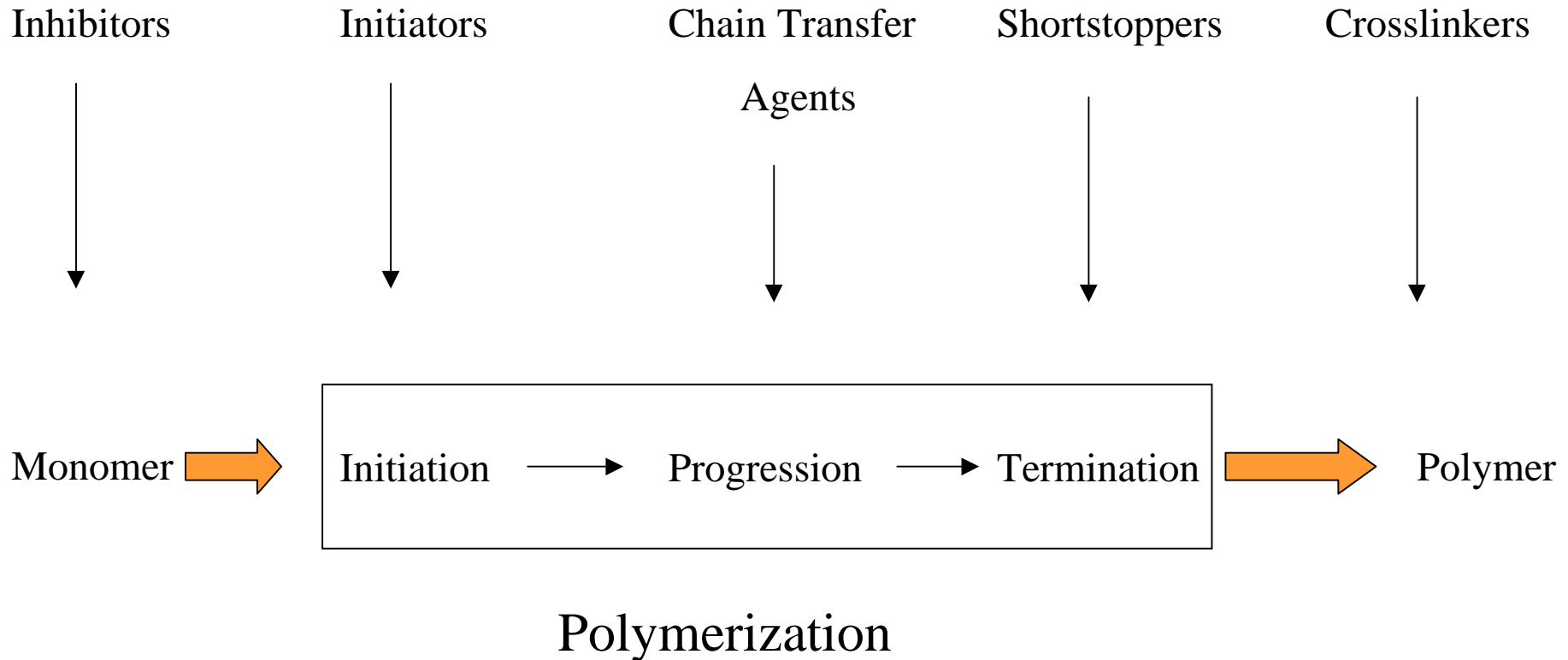


Arkema Products and Emulsion Polymerisation

Emulsion Polymer process (and ATOFINA products)

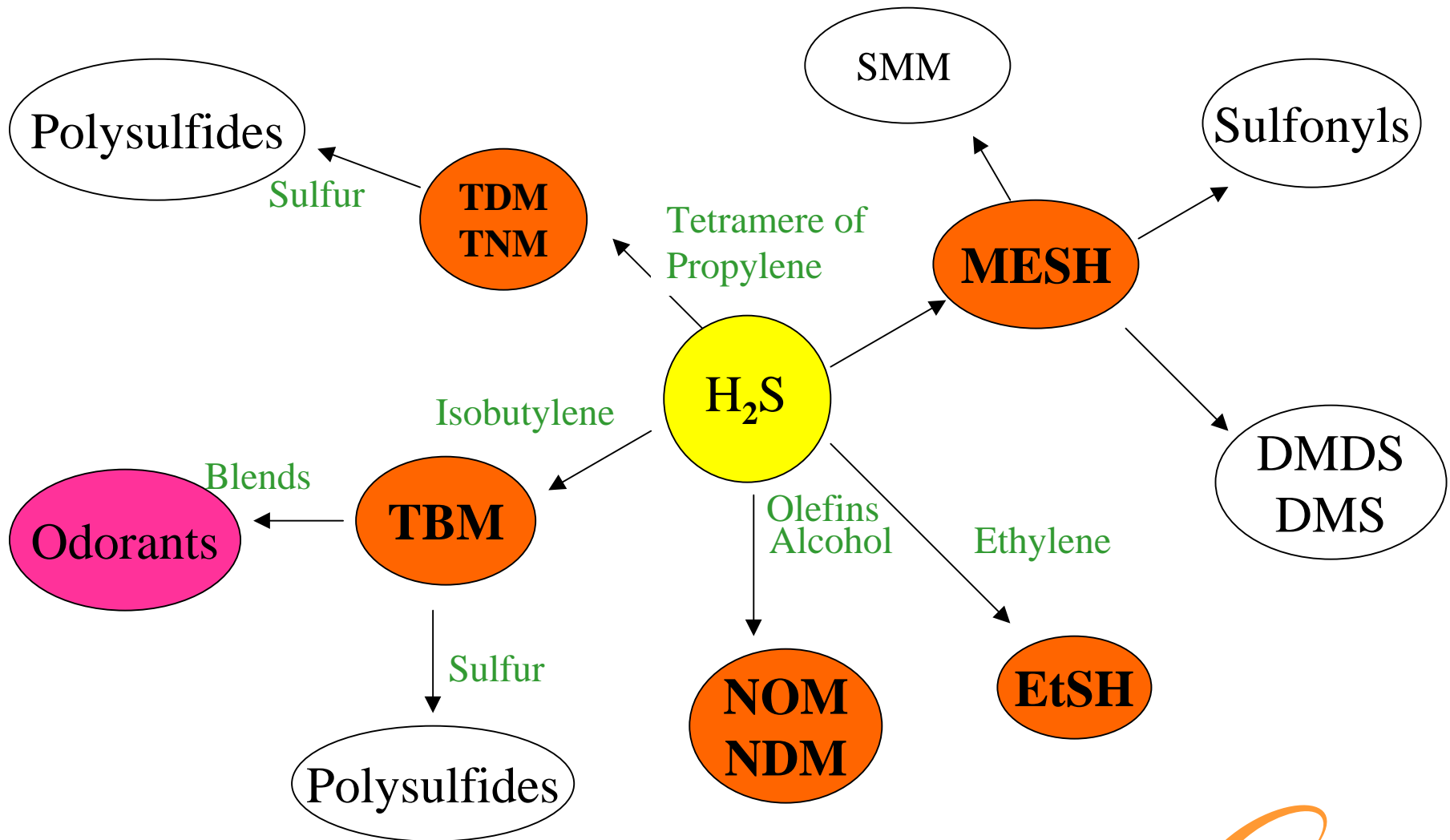


ATOFINA Products and Emulsion Polymerisation

- Acrylic Monomers
- Organic Peroxide Initiators
- Heavy Mercaptan Chain Transfer Agents
- Hydroxylamine Short Stoppers

Mercaptans

Mercaptans and Downstream



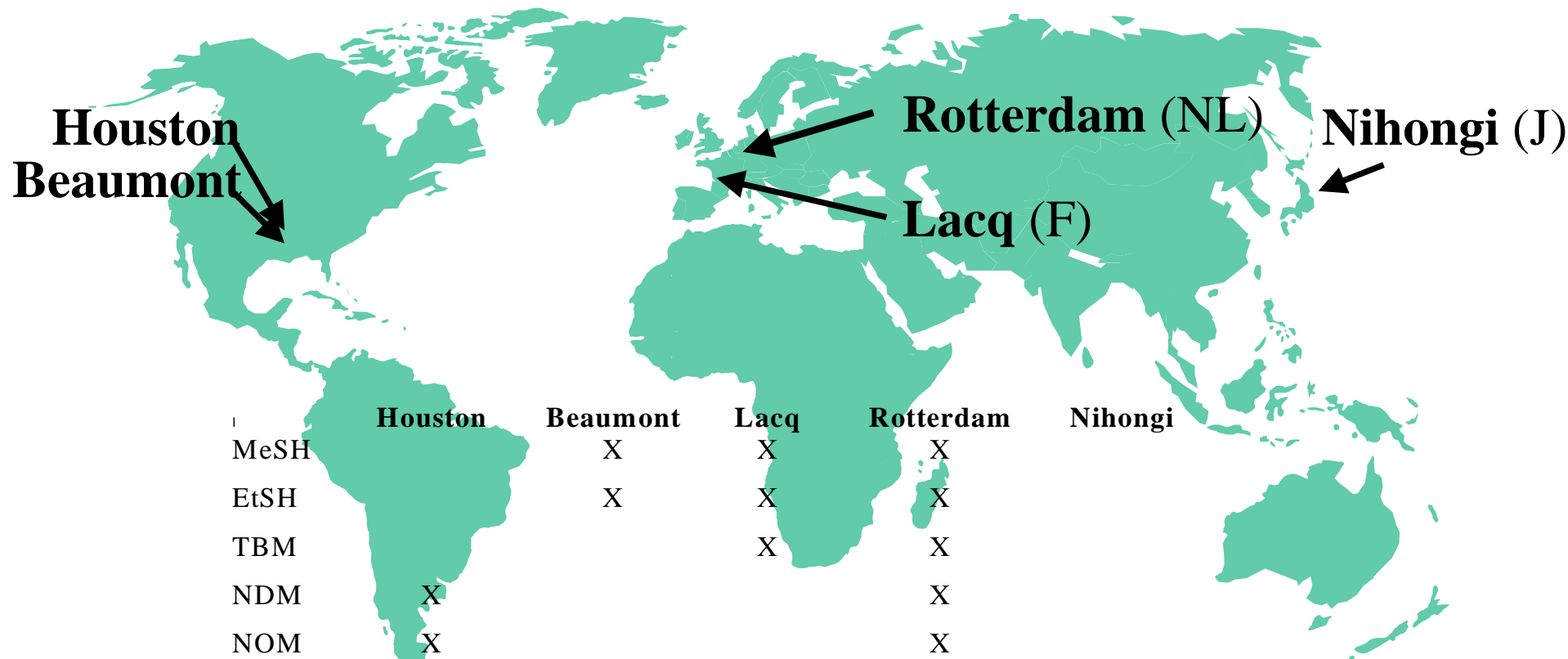
Tertiary Dodecyl Mercaptan

- Elf Atochem's TDM is a "4P" mercaptan
 - From a selected Tetrapropylene
 - Major component is C₁₂
 - "Statistic C₁₂" from selected complex mixture of C₁₀ to C₁₃ branched mercaptans
- Isomer distribution impacts chain transfer performance
- Strict raw material control to limit the impact of Tetrapropylene variations

Normal Dodecyl Mercaptan

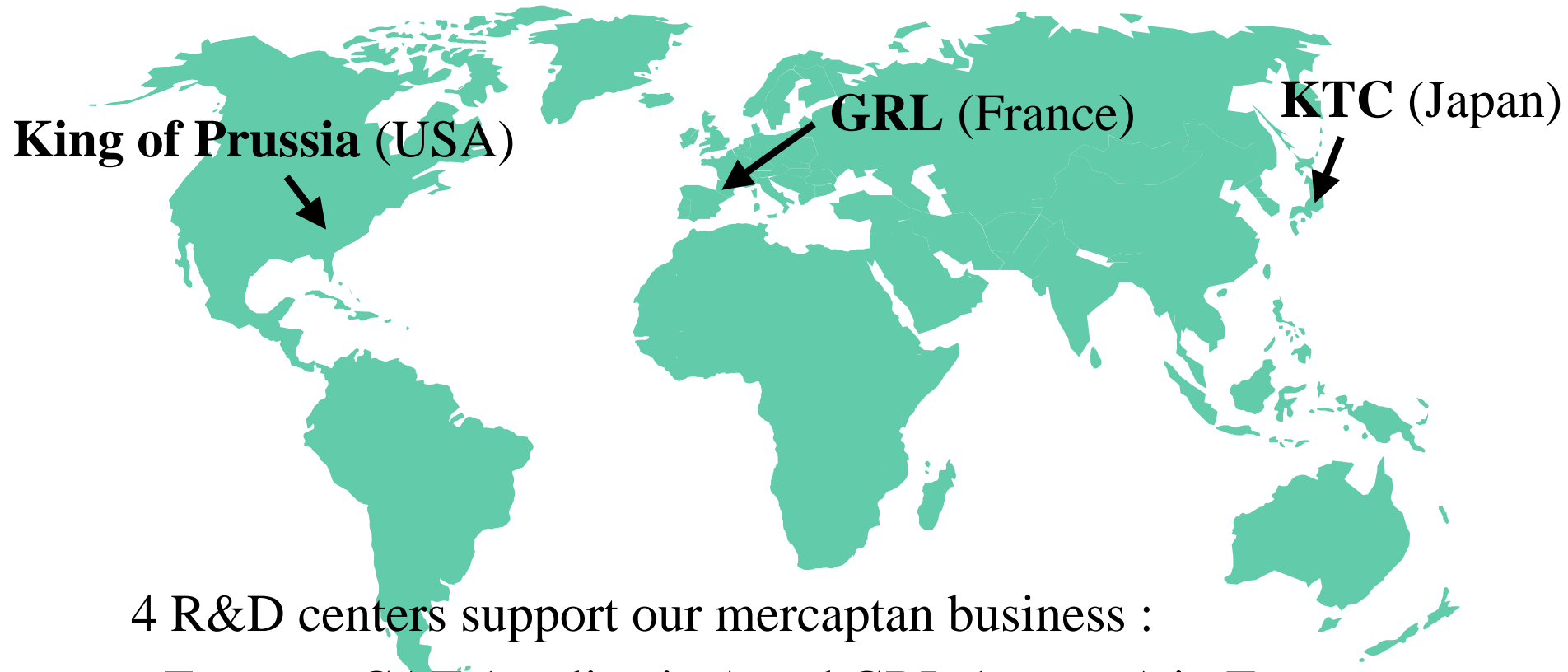
- NDM is a straight chain C_{12} Mercaptan
 - Produced in Europe from n-Dodecanol in Rotterdam
 - Produced in the US from n-Dodecene in Houston

Mercaptan Production Sites



	Houston	Beaumont	Lacq	Rotterdam	Nihongi
MeSH		X	X	X	
EtSH		X	X	X	
TBM			X	X	
NDM	X			X	
NOM	X			X	
TDM	X		X	X	X
TNM	X		X	X	X
IPM				X	
NPM				X	
NBM				X	
CHM				X	

R & D Centers



4 R&D centers support our mercaptan business :

- Europe : CAT (application) and GRL (process) in France
- USA : King of Prussia (Process and application)
- Japan : Kyoto Technical Center (Techn. Support)

Emulsion Polymers

- Heavy Mercaptans as chain transfer agents

Polymer	Type	Mercaptans
SBR.NBR	Rubber	TDM
Neoprene	Rubber	NDM
SBL.XSBR	Latex	TDM
ABS	Plastic	TDM
HIPS	Plastic	TDL,NDM,NOM
PMAA	Plastic	NDM
Toner Resins	Resin	TDN,NDM
MBS	Resin	TDM

Mercaptans Key Markets

- Animal Nutrition
- Agrochemicals
- Lubrication Additives
- Polymers
- Plastic Additives
- Repellents