



CEPSA Química

**HIGH-PURITY PETROCHEMICAL PRODUCTS
FOR LIQUID SCINTILLATION**

ASPERA Conference

Amsterdam 28th October 2008

- i. CEPSA Química. Company profile and business lines**
- ii. Linear alkylbenzene (LAB)**
- iii. LAB as solvent in liquid scintillation**
- iv. Conclusions**



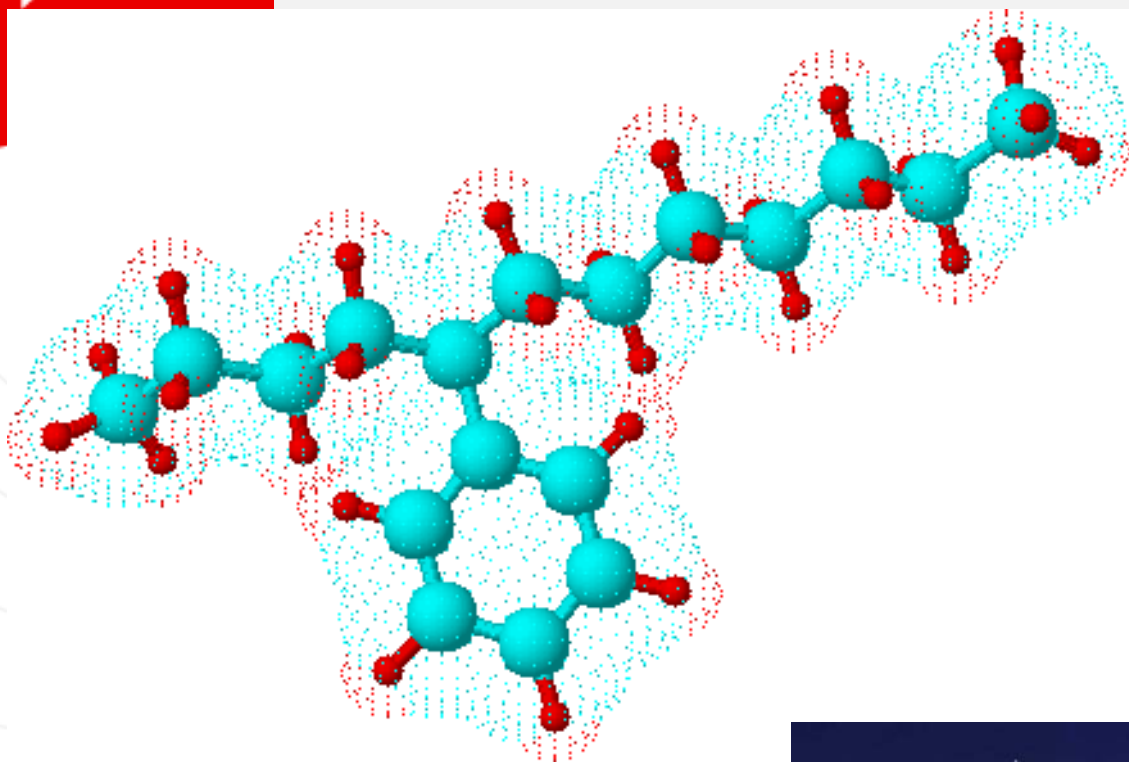
1. CEPSA Química – Business lines

- ❑ CEPSA is the second largest Spanish petrochemical company
- ❑ Focused on exploration, refining, electrical power, gas and chemicals
- ❑ CEPSA Química is the petrochemical division
- ❑ CQ business lines are:

SOLVENTS	INTERMEDIATES	PHENOL/ACETONE	LAB/LAS	PTA/PIA
<ul style="list-style-type: none">▪ Aromatic▪ Dearomatic▪ Aliphatic▪ White Spirit▪ Inks▪ Sulphur <ul style="list-style-type: none">▪ Acetone (Solvent use) <ul style="list-style-type: none">▪ Petrene▪ n-paraffins	<ul style="list-style-type: none">▪ Maleic Anh.▪ Phthalic Anh.▪ Cyclohexane <ul style="list-style-type: none">▪ Methylamines▪ Derivatives▪ AMS	<ul style="list-style-type: none">▪ Phenol▪ Acetone (MMA, BPA use)	<ul style="list-style-type: none">▪ LAB▪ LAS▪ n-paraffins	<ul style="list-style-type: none">▪ PTA▪ PIPA



2. Linear alkylbenzene (LAB)



3 production facilities

Nominal capacity > 550.000 MT/y

Raw material for LAS, the main surfactant for household detergents



**CEPSA Química
Fab. Puente Mayorga**



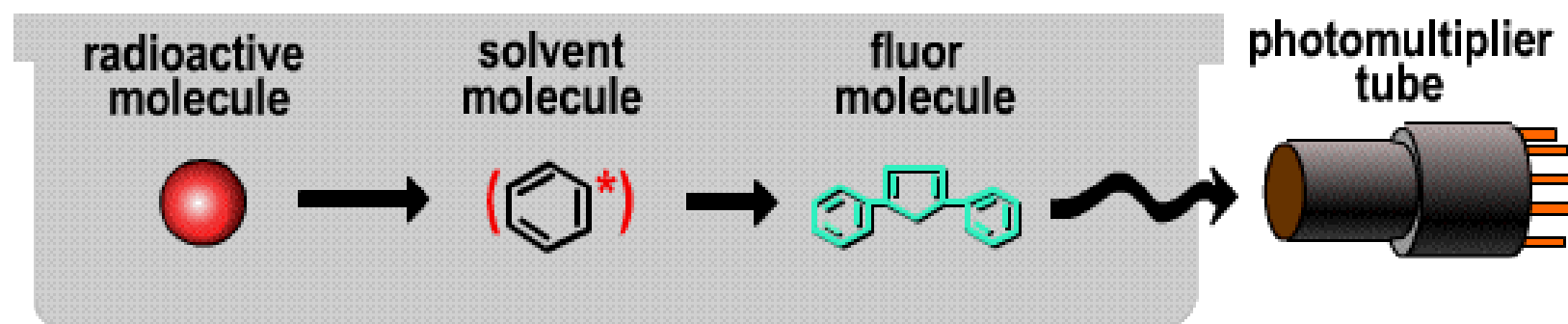
**DETEN Química
Camaçari - (Brasil)**



**CEPSA Química Bécancour
Quebec (Canada)**

3. LAB as solvent in liquid scintillation

The Scintillation Process

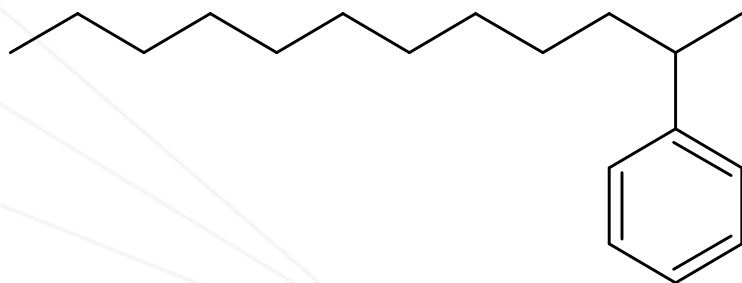


- ❑ The scintillation counting system consists of three primary components: The radioactive substance, the solvent, and the solute (or fluor)
- ❑ Typical solvents: aromatics like benzene or toluene
- ❑ Some chemical compounds (notably chlorine compounds) and highly colored samples can interfere with the counting process - Quenching
- ❑ Quench is a reduction in system efficiency as a result of energy loss in the liquid scintillation solution

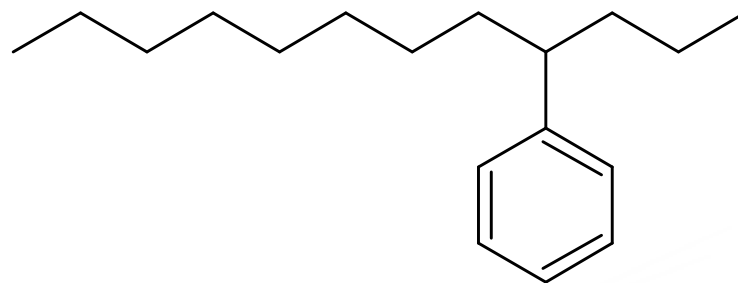
3. LAB as solvent in liquid scintillation

LAB molecule

- Chemical quenching (due to impurities) causes energy losses in the transfer from solvent to solute
- LAB is a high-purity, non-dangerous hydrocarbon chemical



2-phenyl C12 LAB



Internal isomers: 4-phenyl C12 LAB

- Commercial LAB is a mixture of different homologues (C10-C13) and position isomers
- Impurities content is typically below 0.1 % (n-paraffins)

4. Conclusions

- **Linear alkylbenzene (LAB) is a clear and thin hydrocarbon liquid**
- **Commercial LAB is a high-purity product**
- **LAB can be used as solvent in scintillation thanks to:**
 1. **High-purity and transparency**
 2. **Chemical stability**
 3. **Proven low risk to human health**