



09h20 - 09h40

Gestion de l'exposition professionnelle aux poussières de médicaments : La pratique de Sanofi / *Management of occupational exposure to dust of drugs : Sanofi practices*

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Sanofi company

- Worldwide company
- Pharmaceutical industry
- From Research to Supply
 - 100 countries
 - 110000 employees
 - 100 production sites

5 Global Business Units



- Active Pharmaceutical Ingredients (API)
 - Animal health
 - Human health
 - Vaccines

API forms & context



Activity	Number of API moleculars	quantities	Hazards for health	Risk for heath by inhalation
Research & Development	high	Very low to low	unknown	Low to intermediate
Chemistry & Bio-technology	Low – high number of intermediates	Very high	known	high
Pharmaceutical form	medium	medium	known	Medium to high
Supply	high	Very low	known	Very low

Sanofi strategy

- OEL (occupational exposure limit)
 - Expert committee

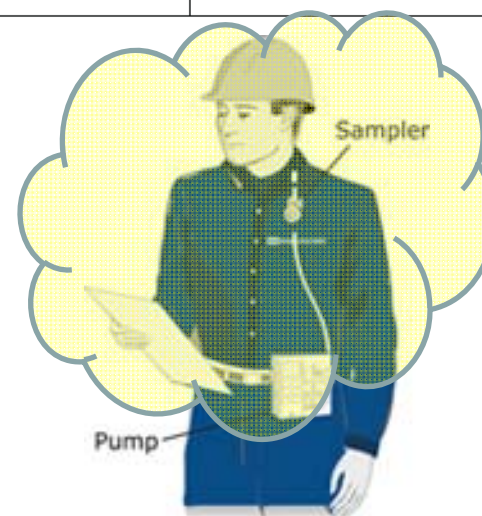
Simplified Hazard Sheet	
BREXPIRAZOLE	
Substance key: FR16738, Version 2.0, (World) Revision Date: 26.08.2016	
Name	: BREXPIRAZOLE
CAS number	: 913611-97-9
Occupational Exposure Limits:	
OEL-8h (Sanofi):	: 0.5 µg/m ³
Remarks	: (approved)
Sanofi Hazard Bands:	
Hygiene	: OEB 5 G1 (approved)

OEB	Range of OEL (mcg/m ³)
OEB 1	1000 – 5000
OEB 2	100 - 1000
OEB 3	10 - 100
OEB 4	1 - 10
OEB 5	< 1

- Trained occupational hygiene technician
 - International W501 training



- Available equipment

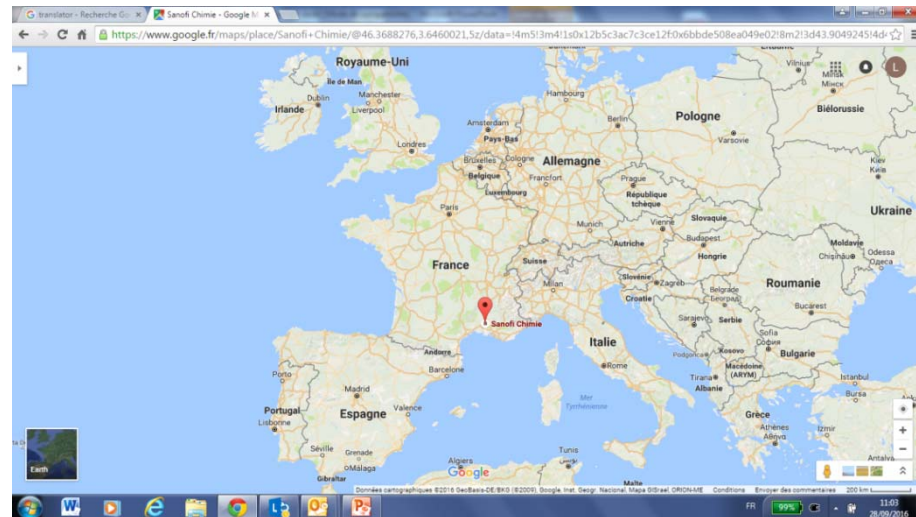


ARAMON C&BD (Chemistry & Biotechnology Development) centralized platform gathering all HSE expertise

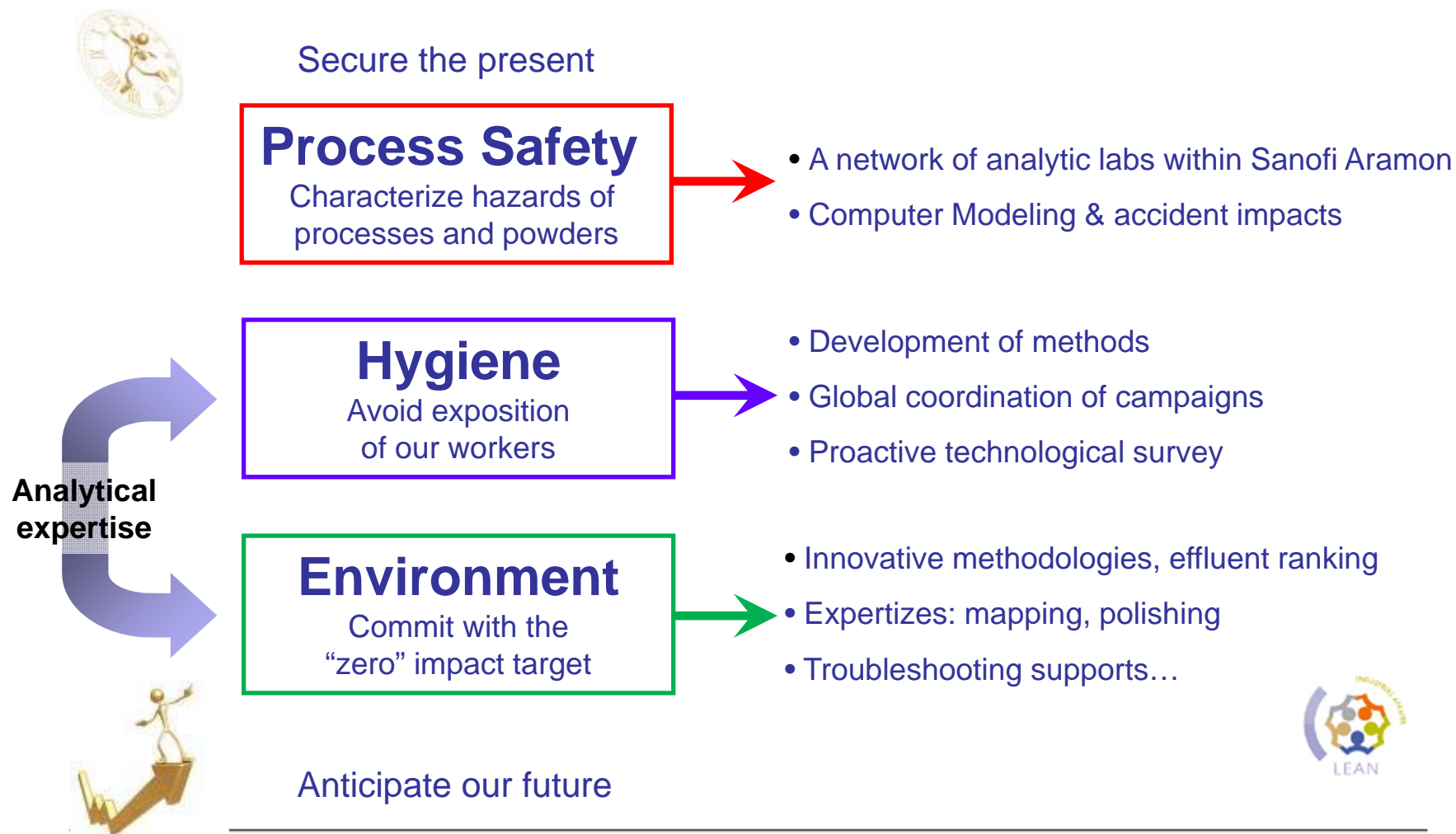


Built by the will of the HSE management
to support sites

The highly skilled scientists devoted to
HSE topics



The HSE fields: from current to future policies



Team Laboratory from Analytic Sanofi Aramon

- Department of Analytical Research and Development
- Occupational Hygiene Laboratory (LAHI)



25 analysts



5 specialists in organic trace analysis
3 for Occupational Hygiene

Laboratory Equipments



Gravimetric - sensibility $>100 \mu\text{g}/\text{m}^3$

Laboratory Equipments



UPLC-UV – sensibility $<100 \mu\text{g}/\text{m}^3$

Laboratory Equipments



UPLC-MS/MS – sensibility $1\mu\text{g}/\text{m}^3$

Laboratory Equipments



LC-SPE-MS/MS – sensibility $<1\mu\text{g}/\text{m}^3$

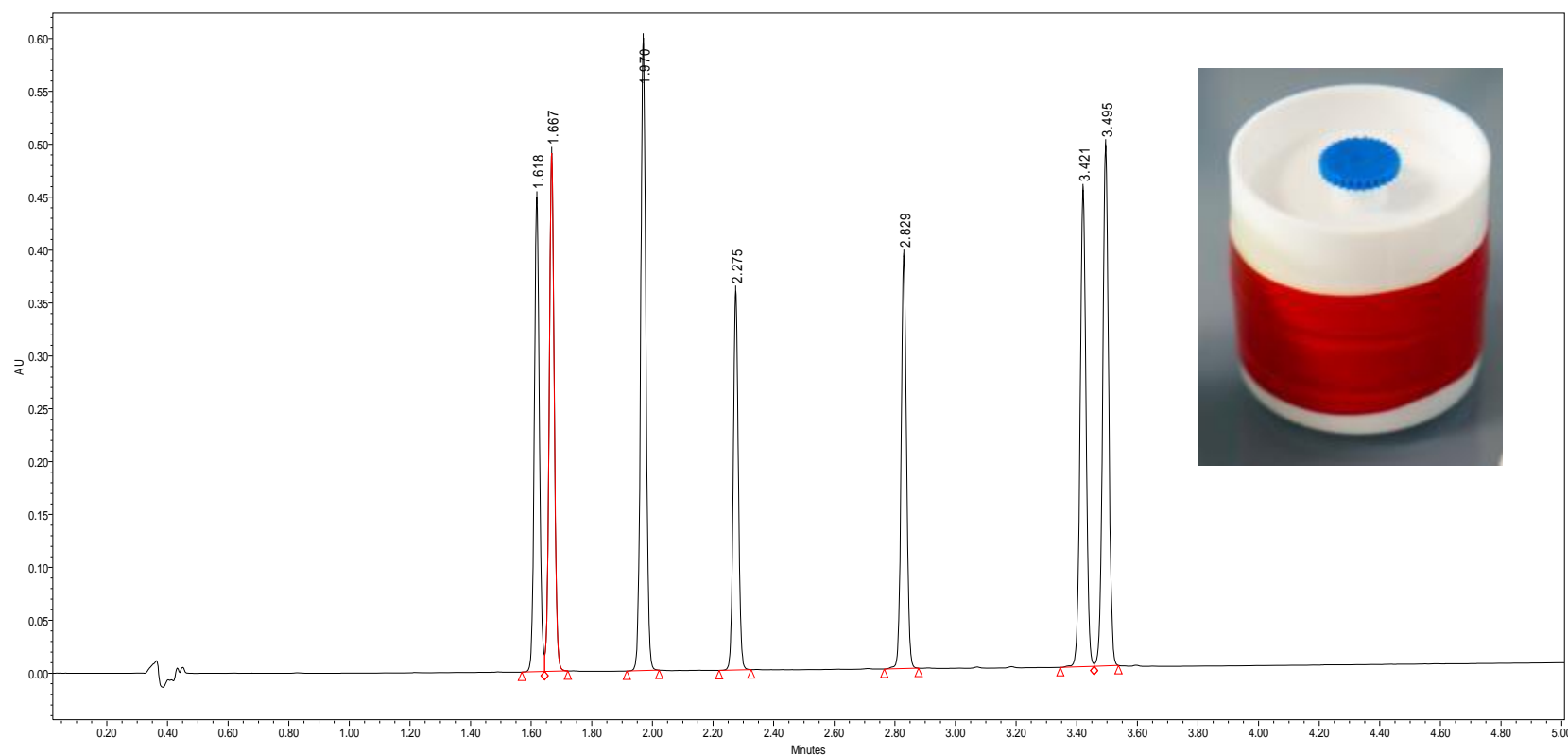
Laboratory Equipments



LC-MS HR - Orbitrap for **identification compounds**

Example of analysis in UPLC-UV

Specifics analysis to multiples compounds in 5 min, **for multi-products**



Analytical capabilities

- 250 specific methods available
 - Corticosteroids - Small molecules - Alkaloids
 - Campaign : method development, cassettes, to 50 samplers
 - Computerized system for relationship with sites/customers
 - Contact: ana.vargas-rodriguez@sanofi.com

The image displays a complex web-based interface for SANOFI's analytical capabilities. It is divided into several sections:

- Left Panel (Navigation):** Includes a search bar, a list of methods (e.g., SPERONOLACTONE-ALD, SULFATE DE MAGNESIUM), and a sidebar with links like 'Users management', 'Study Run', 'Method', and 'Site management'.
- Method Card (Center):** A detailed view of a specific method, 'Air'. It includes:
 - General Info:** RNCAS: 50-23-7, Mw (PM): 362.5, MP (P): 1.
 - Category:** OEL, TWA, STEL, LOQ.
 - Safety:** Harmful, Anti-inflammatory corticosteroid.
 - SECURITY:** Noct. Corticostéroïde anti-inflammatoire.
 - SAMPLING (Prélèvement):** CASSETTE: 37 mm - SR - Solvent résistant polypropylène-3 pièces - SKC; FILTER: Borosilicate Glass Fiber, A/E binder free, 0.8 µm - MILLI; SUPPORT PAD (détecteur): None; FLOW (débit) mini-maxi: 2 - 2 L/min; AIR VOLUME mini-maxi: 30; STORAGE (Conservation): ≤ - days at 5 °C; EXPEDITION: #.
 - EXTRACTION:** Diluent (D): Eau/Méthanol (50/50); Volume: 5 mL; Extraction in: Casette - In Situ; Extraction Efficiency: 0.1X: - µg/Fiber; EE (TR): - % Hydrocortisone; STORAGE (Conservation): ≤ - days at 5 °C.
 - HPLC ANALYSIS:** Buffer: -; COLUMN: Type: Kinetex C18; Supplier (détecteur): Phenomenex; Ref.: 00-4475-AN; L: 100 mm; d_{int}: 2.1 mm; D_{int}: 1.7 µm; Injection: 1 µL; Temperature: °C; Column: 30; Sampler: 5; Detector: UV; λ (nm): 250.
- Right Panel (Fiche Navette HI):** A form for sample analysis, titled 'Fiche Navette HI : Demande de travail / Certificat d'Analyse'. It includes:
 - POUSSIÈRES:** A section for dust analysis.
 - PARAMÈTRES DE PRÉLEVEMENTS D'AIR:** A table for air sampling parameters.
 - SUBSTANCES DE RÉFÉRENCE À FOURNIR PAR LE SITE:** A section for reference substances.
 - Substances de référence à fournir par le site:** A list of reference substances with checkboxes for their availability.

Quality control : validation of methods

● Internal validation of methods

- Exactness
- Precision
- Range
- Interferences
- Capacity of the environment of taking
- Stability of samples
- Critical step



● External validation

- Intercalibration (Round Robin)
- ISO 17025 accreditation
 - General requirements for the competence of testing and calibration laboratories
 - Analyses
 - Development of method



Conclusion



- Need of strong expertise
- on Active Pharmaceutical Ingredient
- Supported by a Company's decision
- with appropriate resources
 - Exposure limits
 - Requirements
 - Training
 - Equipment
 - Laboratory
 - External Qualifications
- Applicable to API in air, water, solid and to process safety parameters
- to support effort to protect the **employee's and community's health**