PerkinElmer BioDiscovery
LSA 2010

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Radiometric Detection
A Long Term Commitment
 Instrument Refreshes
  - Wizard 2 gamma counter launch; January 2008
  - MicroBeta 2 and MicroBeta 2 LumiJet launch; January 2009
  - B Tri-Carb Launch; April 2009

 Revised cocktail formulations
  - Lower radioactive raw materials for lower background
  - Alternate environmentally safer surfactants
  - Continuous monitoring of the quality and applications of products and a proactive approach to assure legislative and environmental compliance

 150 additional radionuclides added to portfolio through Amersham/GE $^3$H and $^{14}$C radiolabel business

 Addition of Scintillation Proximity Assay (SPA) reagents portfolio

The Commitment Continues
Radiometric Detection Product Refreshes

- **Wizard2 gamma counter**
  - 1,2,5 10, 2” detectors
  - 1- 3” detector
  - XP operating system, Touch screen, support for 21CFR Part 11, easy network connection, USB ports, WIZARD Data Analyzer software, Instrument Performance Assessment (IPA)

- **B Tri-Carb**
  - Updated State-of-the-Art Electronics and Mechanics
  - External modern laptop PC controller – Ergonomic mount
  - Automatic 2D bar code reading and sample screening
Radiometric Detection  Product Refreshes

- MicroBeta 2 and MicroBeta2 LumiJET
  - LSA and luminescence assays
  - Up to 12 detectors, 24/96 or 96/384-well formats
  - Improved dispensing for luminescence assays
    - Up to 12-detectors, up to 384-well plates, fast kinetics, live kinetic display, single or dual injectors per detector
  - XP operating system, internal computer
  - Support for 21CFR Part 11, easy network connection, USB ports,
  - MicroBeta² workstation software, TR-LSC Topread, IPA
- Versatility in Counting - Cassettes, Plates, Filters, and Tubes

MicroBeta² 16 shelf/cassette system

MicroBeta² 32 shelf/cassette system

The Commitment Continues
Quality Control & Green Chemistry in Liquid Scintillation Counting

Applications in LSC cocktail production

Jan ter Wiel, Senior Staff Scientist
Marleen Stomp-Smit, Associated Staff Scientist
Nonylphenol Ethoxylates (NPE’s)

NPE’s as Bulk chemicals
- Laundry detergents and cleaners
- Paints, adhesives and resins
- Low cost production required in competitive market

NPE’s as important components of most LSC cocktails
- Aromatic compounds
- Efficient surfactants
- Custom made for PerkinElmer
LSC Quality issues  Nonylphenol Ethoxylates (NPE’s)

Concerns

- Biodegradation of products and intermediates
- Environmental impact
  - Toxic to wildlife, especially for water dwelling organisms
  - Long-lasting, can build up in living organisms
- Europe
  - Endocrine disruptions in aquatic environment
  - EEC regulations Nonylphenol Ethoxylates (1992)
  - European directive 2003/53/EC : level < 0.1%
- USA
  - C&EN June 2006, discussion ban in US
  - SIN list database (project to find safer alternates)
LSC Quality issues  Nonylphenol Ethoxylates (NPE's)

- Declining NPE production
  - LSC cocktail reformulation required

- Alcohol ethoxylates considered alternative surfactants
  - Alcohol ethoxylate
  - Nonylphenol ethoxylate

- Ongoing reformulations
  - Efficiency
  - Background
  - Sample Load Capacities
LSC cocktails  Surfactant substitution

Background in LSC cocktails

- Originating from surfactants
  - Fatty Alcohol
  - NPE (Synthetic alcohol)
LSC cocktails surfactant substitution

Deionized Water

0.1 M Imidazole (pH=7.4)

0.1 M HCl

10% w/w TCA

0.25 M Ammonium Acetate

0.1 M Sodium Sulphate

0.04 M NaH2PO4

0.01 M PBS

0.1 M PBS

0.5 M NaOH

0.1 M NaOH

Digoxin buffer

0.05 M Tris/HCl

0.15 M NaCl

Serum

ml sample per 10 ml Cocktail (20°C)
Tritium Counting efficiency (abs)

Tritium eff. at 16 °C
ml sample in 10 ml cocktail

LSC cocktails surfactant substitution
PerkinElmer will continue to improve the Radiometric product portfolio

- Instrument Refreshes and Future Enhancements
- Cocktail reformulations for a greener environment and enhanced performance
- Additional Radiolabel product offerings
- Application database now on Web site

Closing Announcements:

- Older Wallac model LSAs and Gamma counters (older than 1984) – Rackbeta LSAs, Multigamma, also BetaPlate & Oximate have been placed on End of Life status
  - No new service maintenance agreements will be written beginning 1 January 2011
  - Service on systems will continue on parts availability best effort
- LSA user’s group Paris September Monday 13 Hotel BEL – AMI, 7-11 rue St. Benoit
  - Looking for an additional customer presentation

A Long Term Commitment
Thank you for your attention!

If you have further questions please let us know!

You can find us at the PerkinElmer booth

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