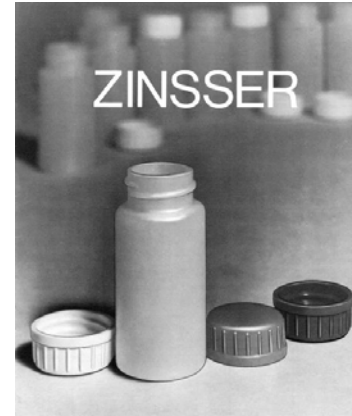


Our Technical Solutions for L.S Counting of Low Activities Environmental Samples

47 years of commitment to LSC

- 1970 Werner Zinsser started with PPO und POPOP sales
- 1972 Moulding of the first plastic 20ml Vials - Polyvial®
- 1976 Moulding of the first plastic 6ml MINIS 2000®



- 1985 First robotics for 14C / 3H samples oxydations
- 1986 First Flow-Scintillation Cocktail - Quickszint Flow®
- 1987 First sales of the Low-Background-Scintillation Counter Aloka LB-3



- 2013 First sales of the Low-Background-Scintillation Counter Hitachi Aloka LB-7
- 2016 First sales of the Universal LSCounter Hitachi LSC 8000
- 2017 One excellent new cocktail : SuperSolve X for aqueous samples / basic samples



Consumables (vials and cocktails) from

ZINSSER
ANALYTIC

11 different cocktails to meet all the possible samples requirements , featuring 8 safe cocktails (D.I.P.N based) and 3 traditionnal formulas (pseudocumene based)



QS 400 : 54 €/ liter
AS 300 -500 : 39€ /liter

THX to

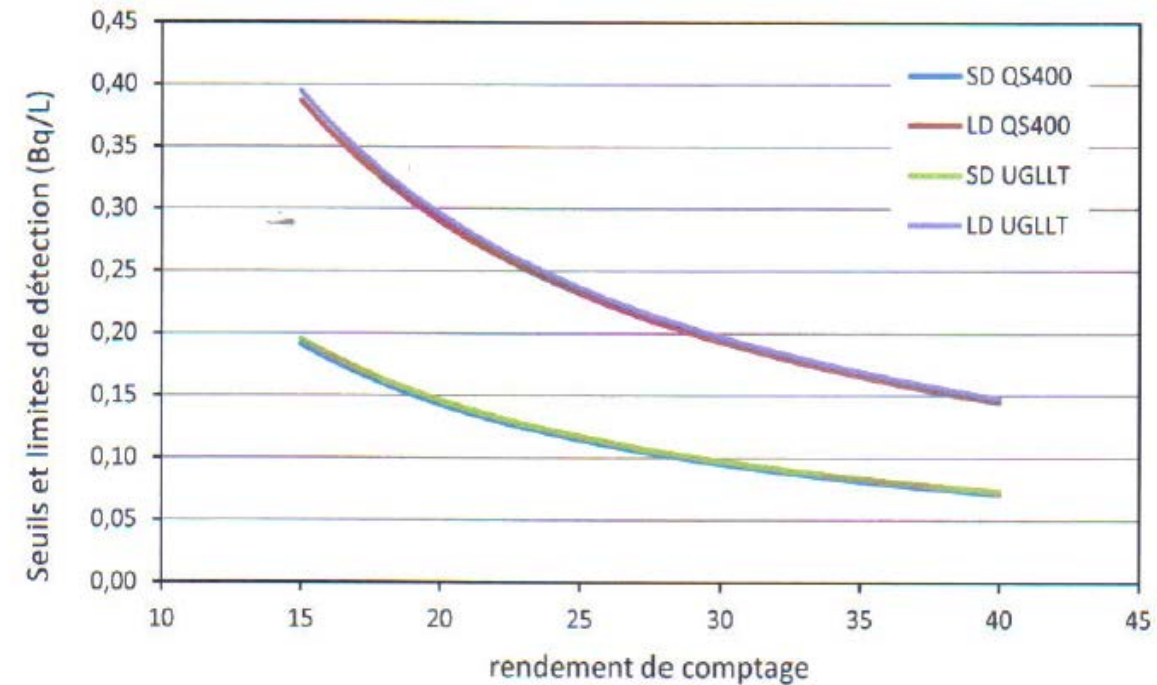


3H in water, 70ml sample / 70 ml cocktail, 1440 mn counting time, LB7 LSC

Eff	Det Thr	Det Lim	Eff	Det Thr	Det Lim
23	0,124707638	0,252265275	23	0,127232764	0,257333464
24	0,119511487	0,241754222	24	0,121931399	0,246611236
25	0,114731027	0,232084053	25	0,117054143	0,236746787
26	0,110318295	0,223157744	26	0,11255206	0,227641141
27	0,106232433	0,214892642	27	0,108383466	0,219209988
28	0,102438417	0,207217905	28	0,104512627	0,21138106

Bq /l , QS 400

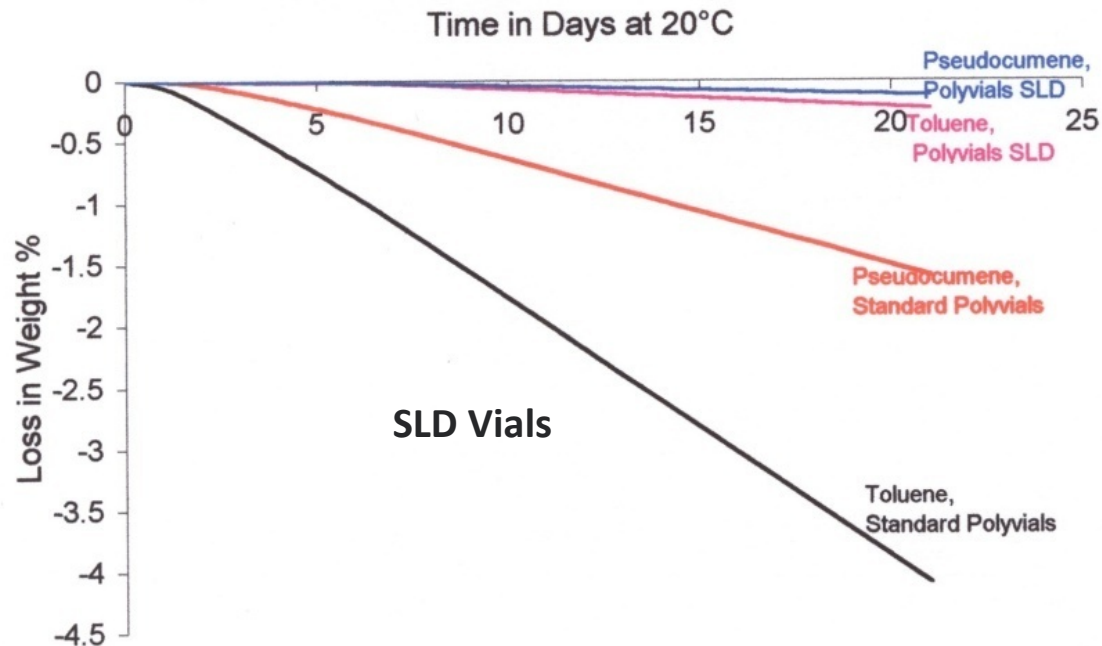
Bq /l, UG LLT



Wide range of glass and plastic vials from 3ml to 145ml including **Super Low Diffusion vials** and colored screw-caps, reliable availability and distribution network in any country



184 € / 1000
SLD : 158 € / 100



Extremely low diffusion AND far better UV transmission compare to PTFE

Samples Oxydizers

- If any **3H** in the samples : catalytic combustion → tritied water dropped in a special cocktail (20ml plastic vial)
- If any **14C** in the sample : catalytic combustion → $^{14}\text{CO}_2$ trapped in a special cocktail (20ml plastic vial)

“Be wise , oxydize !”.



- **Water samples (0.5 ml – 1 ml)**
- **Environmental solid samples (grass, leaves , soils,) 0,2 g – 0,8 g**
- **Various material from decommissioning process (pieces of rubber , plastic , oil, paints ...)**

So many publications available (Ox 300 , Ox 500 , Ox 501) since the 70ties !

Just some weeks ago :

**APPLICATION OF BIOLOGICAL SAMPLE OXIDISER AND LOW-LEVEL LIQUID
SCINTILLATION COUNTER FOR THE DETERMINATION OF ¹⁴C AND ³H
CONTENT IN WATER FROM THE HARTBESPOORT DAM IN NORTH-WEST
PROVINCE**

**MASTER OF SCIENCE in the subject ENVIRONMENTAL SCIENCE
at the UNIVERSITY OF SOUTH AFRICA**

Mrs LAMLILE HLAKANIPHILE NTANDO KHUMALO

Accelerator Mass Spec / Gas Prop Counter / Catalytic Oxydation – LSC

Liquid Scintillation Counters from

Hitachi

LSC 8000 : For any standard / basic needs

regarding any beta emitters counting (alpha
emitters in option) in cpm and dpm (Bq) modes

Regular background (from 3,5-12 cpm according to the
measuring channel and the size / material of the vial)

Window: 0.90-4.95keV

Vial: 20ml Polyethylene Vial

Water to Cocktail Ratio: Water 10ml to Ultima Gold LLT 10ml

Background 4.24 CPM (700 minutes counting)

H-3 Efficiency: 29.5 % by Eckert&Ziegler Standards (10 minutes counting)

Regular efficiencies (62% 3H , 96% 14C)

Max loading : 408 samples



This PowerPoint includes information confidential to Gardner Denver.

LB 7

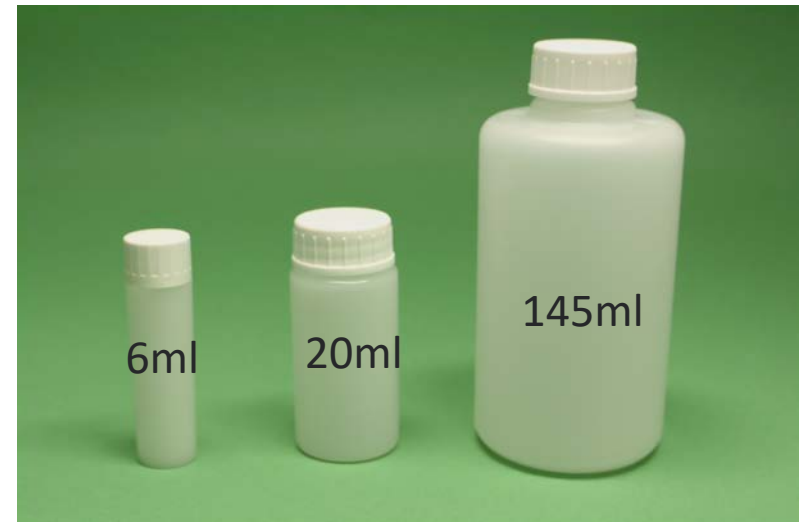
For the lowest
achievable MDAs
Or the shortest
counting times



Ultra low background with 500 kg passive lead shielding

Active Guard Counter using plastic scintillator and
2 PMT

Measuring Counter using 3 PMT (3 x 120°
counting geometry)



This PowerPoint includes information confidential to Gardner Denver.

Unsurpassed MDAs without any background data manipulation in Environmental Analysis for measuring 3H in water :

70 ml of water / 70 ml of cocktail – 23 % - 27%
3H efficiency in optimized window 0.4 / 0.5 kev
to 4.5 / 5.5 kev, 1440 m counting time
background from 2.5 to 3.5 cpm (70ml of
cocktail in 145ml plastic vial)



MDAs



0,2 Bq / liter in 24 hours

Or

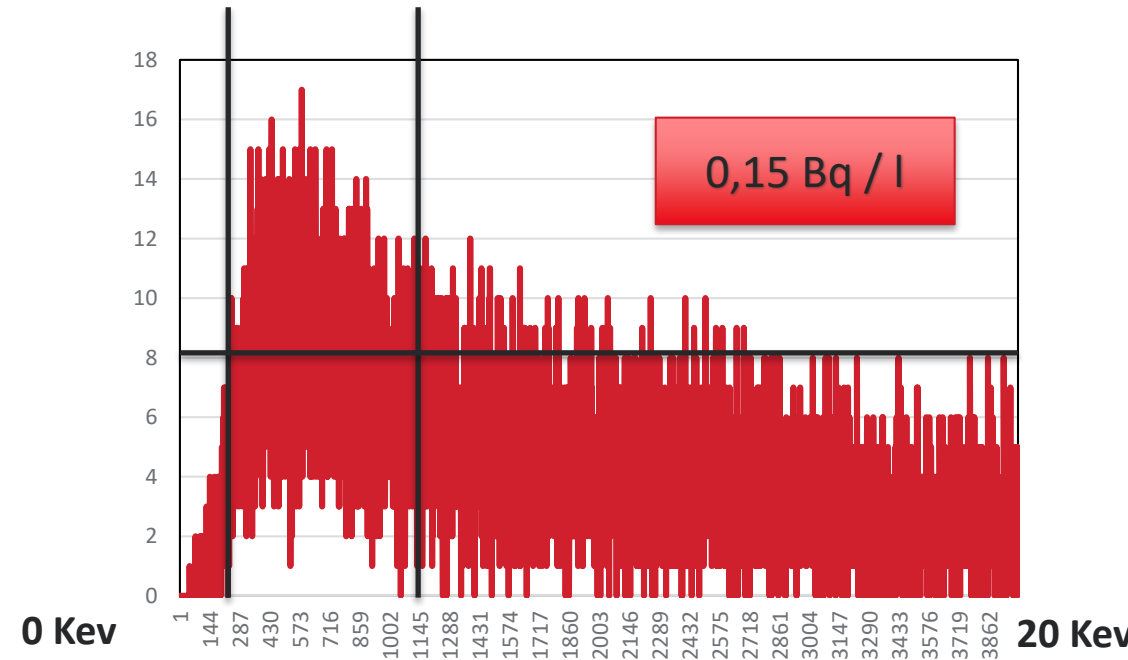
1 Bq / liter in 1 hour

Or

7 Bq / liter in 3mn

Thx
to

0.5 Kev 4.75 Kev Sample 3



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Thank you for your attention !