



# CERTIFIED REFERENCE MATERIAL BCR<sup>®</sup> – 598

## CERTIFICATE OF ANALYSIS

COD LIVER OIL					
	Mass fraction				Number of accepted sets of data p
	Certified value <sup>1)</sup>		Uncertainty <sup>2)</sup>		
Hexachlorobenzene	55.7	µg/kg	2.0	µg/kg	11
α-HCH	42	µg/kg	3	µg/kg	13
β-HCH	16	µg/kg	3	µg/kg	9
γ-HCH	23	µg/kg	4	µg/kg	9
γ-Chlordane	6.9	µg/kg	1.6	µg/kg	6
α-Chlordane	24.4	µg/kg	1.8	µg/kg	12
Oxychlordane	11.0	µg/kg	1.8	µg/kg	7
Transnonachlor	39	µg/kg	4	µg/kg	12
Dieldrin	59	µg/kg	4	µg/kg	12
p,p'-DDE	0.61	mg/kg	0.04	mg/kg	9
o,p'-DDD	30	µg/kg	4	µg/kg	9
p,p'-DDD	0.40	mg/kg	0.03	mg/kg	10
p,p'-DDT	0.179	mg/kg	0.018	mg/kg	9
1) This value is the unweighted mean of the means of p accepted sets of results, obtained by different laboratories employing various clean-up procedures followed by gas chromatography coupled to different detector systems. The values are traceable to the SI.					
2) The uncertainty is taken as the half-width of the 95 % confidence interval of the mean given above.					

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 200 mg.

### NOTE

This material has been certified by BCR (Community Bureau of Reference, the former reference materials programme of the European Commission). The certificate has been revised under the responsibility of IRMM.

Brussels, March 1997  
Latest revision: September 2013

Signed: \_\_\_\_\_

Prof. Dr. Hendrik Emons  
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Joint Research Centre  
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## DESCRIPTION OF THE SAMPLE

The sample consists of a natural cod liver oil containing incurred organochlorine pesticides. It is provided in sealed glass ampoules containing approx. 5 g material under dry argon.

## ANALYTICAL METHOD USED FOR CERTIFICATION

Calibration was done with solutions of pesticides made from compounds of verified purity and stoichiometry. The oil samples were cleaned-up by column chromatography on basic alumina, silica gel, florisil or by high performance liquid chromatography. Capillary gas chromatography with electron capture or mass spectrometric detection was performed using different injection systems, different columns and different temperature programmes.

## PARTICIPANTS

### 2.1 Preparation, Homogeneity and Stability Studies

- SOAFD Marine Laboratory, Aberdeen (GB)

### 2.2 Certification Analysis of the pesticides

- Agricultural Research Centre of Finland, Jokioinen (FI)
- Institute of Marine Research, Bergen (NO)
- Instituto Hidrografico, Ministerio da Defesa Nacional, Lisboa (PT)
- Laboratoire Central d'Hygiène Alimentaire - CNEVA, Paris (FR)
- Milchwirtschaftliche Untersuchungs- und Versuchsanstalt, Kempten (DE)
- Ministry of Agriculture, Fisheries & Food - MAFF, Burnham-on-Crouch (GB)
- Nestec Ltd., Research Laboratories, Nestlé, Lausanne (CH)
- RIVM, Nat. Inst. of Public Health & Environmental Protection, Bilthoven (NL)
- RIVO-DLO, Ijmuiden (NL)
- SOAFD, Marine Laboratory, Aberdeen (GB)
- Statens Lantbrukskemiska Laboratorium - SLL, Uppsala (SE)
- TEAGASC - The National Food Centre, Dublin (IE)
- TNO-Voeding, Zeist (NL)

## SAFETY INFORMATION

Several compounds are potentially carcinogenic. Despite that they are present in BCR-598 below accepted risk levels, appropriate precautions should be applied in the laboratory.

## INSTRUCTIONS FOR USE

This material is intended for method validation and quality control on the determination of the 13 organochlorine pesticides. A cooled ampoule is to be equilibrated to room temperature before opening. Dispose in accordance with good laboratory practice.

## STORAGE

The ampoules should be stored unopened and preferably at 18 °C. The European Commission cannot be held responsible for changes that happen during storage of the material at the customer's premises, especially of opened samples.

## LEGAL NOTICE

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## NOTE

A technical report on the production of BCR-598 is available on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.