Hygiene-Institut des Ruhrgebiets
Institut für Umwelthygiene und Toxikologie
Direktor: Prof. Dr.rer.nat. Lothar Dunemann
Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.

HYGIENE-INSTITUT · Postfach 10 12 55 · 45812 Gelsenkirchen

CW FIRE – SUPPORT GmbH
Sprudelallee 14
D-63628 Bad Soden - Salmünster

Besucher-/Paketanschrift:
Rotthauser Str. 21, 45879 Gelsenkirchen

Zentrale	(0209) 9242-0
Durchwahl	(0209) 9242-350
Telefax	(0209) 9242-333
E-Mail	s.bien@hyg.de
Internet	www.hyg.de

Unser Zeichen: A-298272-18-Bi_en
Ansprechpartner: Herr Bien

Gelsenkirchen, den 28.05.2018

Foam fire extinguishing agents "TRIDENT" dated 15.09.2017

Inspection and evaluation of fire extinguishing agents as per references of DIN EN 1568-1 to 4 and as per Attachment B of the Guideline VdS 3124

here: **Summary of the ecotoxicological, sewage-technical and occupational medicine inspection and evaluation**

Your letters dated 13.09.2017 and 26.10.2017; Mr Clemens Widmayr

Dear Mr Widmayer,

as part of the aforementioned order, the sample of a non-fluorinated foam fire extinguishing agent with the name **"TRIDENT"** relating to biodegradability, manufactured by your company, was examined for the content of fluoro-organic compounds, with regard to the behaviour towards higher and lower water organisms (aquatic toxicity), towards seed emergence and growth of higher plants as well as the behaviour of earthworms (terrestrial toxicity), with respect to irritation effect on skin and eyes as well as regarding oral toxicity to mammals.

The analytical work was carried out in accordance with the OECD Test Guidelines as well as the regulations laid down in the German standard methods for the examination of water, waste water and sludge (Deutschen Einheitsverfahren zur Wasser-, Abwasser- und Schlammuntersuchung)

The results of our tests and assessments apply to the examined test objects and the statutory rules at the time of testing. The accreditation applies to the test procedures listed in the attachment to the accreditation certificate (http://www.hyg.de). Examinations which do not fall into the accredited area are marked.

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-13042-02-00

As part of these examinations carried out on the extinguishing agent concentrate **"TRIDENT"** dated 15.09.2017, the subsequent summarised test data can be calculated:

Method	Unit	**Toxicity value / test data**
Bacterial toxicity (TTC / DIN 38412 - L3)	NOEC	**3.0 ml/l**
Toxicity to fish (OECD 203)	LC_{50}	**1600 mg/l**
Daphnia toxicity (OECD 202)	EC_{50}	**1400 mg/l**
Algal toxicity (OECD 201)	IC_{50}	**800 mg/l**
Biodegradability (OECD 301f)	Degradation after 28 days	**95.6 %**
Light bacterial toxicity (DIN ISO 11348-2)	EC_{50}	**580 mg/l**
Fluoro-organic compounds content (DIN 38407 - F42)	µg/l	**bld.**
Toxicity to mammals (OECD 420)	LD_{50} rat	**> 2000 mg/kg** body weight
Corrosivity and irritation to skin (OECD 404)	-	**not skin irritating / corrosive**
Eye-chafing effect (OECD 405)	-	**Not eye chafing / irritating**
Earthworm toxicity (DIN ISO 11268-1)	LC_{50}	**> 10000 mg/kg**
Plant growth test (DIN ISO 11269-2)	EC_{50}	**500 mg/kg**

bld. = below limit of detection

Refer to the corresponding detailed test reports for the detailed examination results.

A-292355-17-Bi dated 26.01.2018:
"Ecotoxicological and waste water inspection and evaluation"

A-294153-18-Bi dated 29.01.2018:
"Irritant effect on skin and eyes as well as determining oral toxicity to mammals"

A-294188-18-Bi dated 29.01.2018:
"Biological soil examination and evaluation"

Kind regards
Director of the Institute
On behalf of

Dipl.-Umweltwiss. Sebastian Bien
Deputy Department Head
Waste water, soil, air hygiene