



# FULL-SCOPE CBRN DETECTION, MEASUREMENT, ANALYSIS AND PREVENTION SYSTEM SOLUTIONS



- Detection at High Precision

- Capability to Detect Different Biological, Chemical Agents

- Automatic – Semi-Automatic Operation System

- LCD Display Support



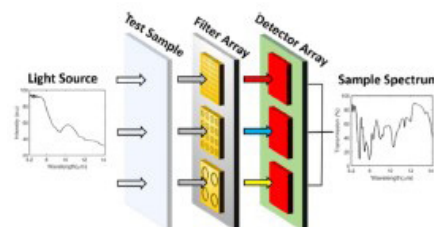
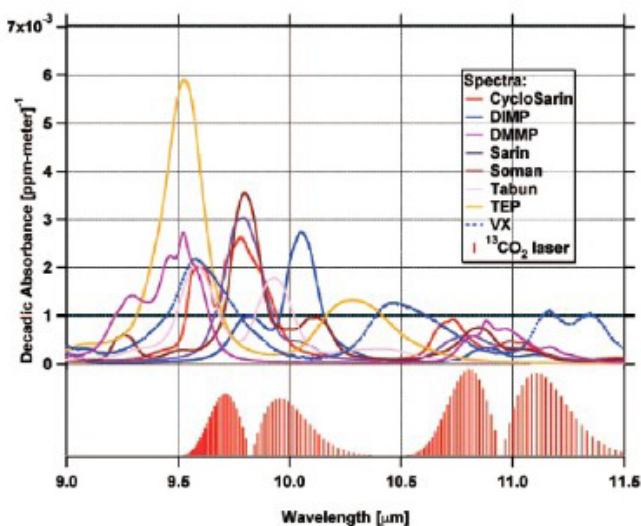
# CHEMICAL DETECTION DEVICE

Optical spectroscopy, is a very powerful technic for toxic gas analysis. It enables measurements of light absorption, emission, scattering and rotation, significant structural data and chemical definition of these. Each element of an optical filter series transmits the filtered light to the matching element of a photodetector series. It uses a Fourier transform infrared microscope (FTIR) to record the optical power transmitted from each filter.

This data is transferred to an RLS algorithm estimating incident spectrum with transfer spectrums of this filter and reconfigures transfer spectrum and infrared light source spectrum of our FTIR. An algorithm is used for matching the spectrums recorded in the library, including common chemical war agents and toxic industrial chemicals. TICs (Toxic Industrial Chemicals) detector is designed to give alarm in cases of detection automatic control of NH<sub>3</sub>, AsH<sub>3</sub>, CS<sub>2</sub>, HCN, HNO<sub>3</sub>, HCN<sub>2</sub>, PCI<sub>3</sub> and SO<sub>2</sub> amongst Toxic Industrial Substances and in case threshold values of hazardous substance concentrations are exceeded. CWA (Chemical War Agents) detector is designed to automatically control nerve gases (GA, GB, GD, GF, VX) and blister gases (HD ve L) amongst Chemical War Substances and warn the user in case threshold values of chemical agent concentrations are exceeded

Chemical Detector also gives warning for VOC\*\*, VVOC\*, LEL, Oxygen, sulphuredioxide and phosphate Gases.

Explanation	Boiling Point Range	Specific Sample Agents
Very volatile organic compounds (VVOC*)	<0 and 50-100	Propane, Butane, Chloromethane etc.
Volatile organic compounds (VOC*)	50 - 100 and 240-260	Formaldehyde, Limonene, Toleun,

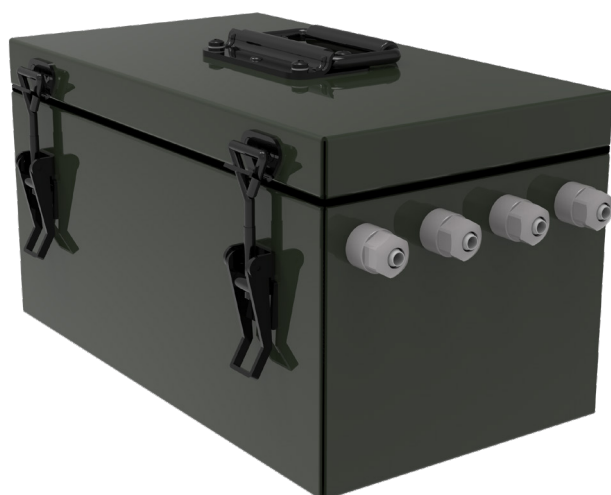


## OPTION 1

Abbreviation	Gas Group
AC	Blood Agent Gases (Hydrogen Cyanide, Cyanogen Chloride)
H	Blister Gases (Mustard, Lewisite)
CG	Choking Gases (Phosgene, Chloropicrin)
G	Nerve Gases (Sarin, Soman, Tabun, VX)

Alarm Level	Nerve Gases				Blister Gases	
	GA (mg/m3)	GB (mg/m3)	GD (mg/m3)	VX (mg/m3)	HD (mg/m3)	L (mg/m3)
1st Level	0,3	1	0,8	0,015	1	1
2nd Level	1	2,0	1,5	0,030	3	3
3rd Level	2	2,4	2,2	0,050	8	8
4th Level	4	2,6	3	0,070	10	10
5th Level	6	2,8	3,8	0,090	18	18
6th Level	8	3	5	0,100	35	35
7th Level	10	3,2	5,5	0,110	45	45

Specification	Value	Unit
Weight	12	kg
Dimensions (WidthxLengthxHeight)	332x450x645	mm
Operating Temperature	+15 - +65	°C
Power Requirement	24	VDC
	2	A
Communication	CAN J1939	RS485



## OPTION 2

#	Chemical	CAS #	Group	Phase*	PEL**** (OSHA)	REL***(NIOSH)	IDHL*****
1	GA TABUN	77-81-6	1	Liquid	**	**	**
2	GB SARIN	107-44-8	1	Liquid	**	**	**
3	GD SOMAN	96-64-0	1	Liquid	**	**	**
4	GF CYCLOSARINE	329-99-7	1	Liquid	**	**	**
5	VX	50782-69-9	1	Liquid	**	**	**
6	CARBONYL SULFIDE	463-58-1	1	Gas	**	TLV-TWA 5 ppm	**
7	METHYL MERCAPTAN	74-93-1	1	Gas	C 10 ppm	0.5 ppm (1 mg/m <sup>3</sup> )	150 ppm
8	HD HARDAL GAS	505-60-2	2	Liquid	**	**	**
9	L LEVIZIT	541-25-3	2	Liquid	**	**	**
10	HL HARDAL LEVEZIT MIX	UN:2810	2	Liquid	**	**	**
11	BROMINE	7726-95-6	2	Liquid	TWA 0.1 ppm	TWA- 0.1ppm STEL-0.3ppm	3 ppm
12	ACRYLONITRILE	107-13-1	2	Liquid	TWA 2 ppm C 10 ppm	Ca TWA 1 ppm C 10 ppm	85 ppm
13	ACETONE CYANOHYDRIN	75-86-5	2	Liquid	**	C 1 ppm	**
14	ETHYLENEIMINE	151-56-4	2	Liquid	**	**	100 ppm
15	CHLOROPICRIN PS	76-06-2	2	Liquid	TWA 0.1 ppm	TWA 0.1 ppm	2 ppm
16	AC HIDROJEN CYANIDE	74-90-8	3	Gas	**	**	**
17	SA ARSIN	7784-42-1	3	Gas	**	**	**
18	CK CYANOGEN CHLORIDE	506-77-4	3	Gas	**	**	**
19	CHLORINE	7782-50-5	3	Gas	TWA- 0.1 ppm	C- 0.5ppm	10 ppm
20	ETHYLENE OXIDE	75-21-8	3	Gas	TWA 1 ppm	TWA <0.1 ppm	800 ppm
21	FORMALDEHYDE	50-00-0	3	Gas	TWA 0.75 ppm	TWA 0.016 ppm	20 ppm
22	HYDROGEN CHLORIDE	7647-01-0	3	Gas	C 5 ppm	C 5 ppm	50 ppm
23	HYDROGEN FLUORIDE	7664-39-3	3	Gas	TWA 3 ppm	TWA 3 ppm	30 ppm
24	AMMONIA	7664-41-7	3	Gas	50 ppm	TWA 25 ppm	300 ppm
25	AC HYDROGEN CYANIDE	74-90-8	3	Gas	TWA 10 ppm	ST 4.7 ppm	50 ppm
26	HYDROGEN SULFIDE	10294-34-5	3	Gas	C 20 ppm; 50 ppm	C 10 ppm	100 ppm
27	NITRIC ACID	7697-37-2	3	Liquid	TWA 2 ppm	TWA 2 ppm, ST 4 ppm	25 ppm
28	CARBON DISULFIDE	75-15-0	3	Liquid	TWA 20 ppm C 30 ppm	TWA 1 ppm	500 ppm
29	SULPHUR DIOXIDE	7446-09-5	3	Gas	TWA 5 ppm	TWA 2 ppm, ST 5 ppm	100 ppm
30	ALLYLAMINE	107-11-9	3	Liquid	**	**	**
31	METHYL ISOCYANATE	624-83-9	3	Liquid	TWA 0.02 ppm	TWA 0.02 ppm	3 ppm
32	N-BUTYL ISOCYANATE	111-36-4	3	Liquid	**	**	**
33	NITROGEN OXIDE	10102-44-0	3	Gas	C 5 ppm	STEL 1 ppm	20 ppm
34	PHOSPHINE	7803-51-2	3	Gas	TWA 0.3 PPM	TWA 0.3 PPM - ST 1 PPM	50 PPM
35	CG FOSGEN-PHOSGENE	75-44-5	4	Gas	TWA 0.1 ppm	TWA 0.1 ppm	2 ppm
36	CX FOSGEN OKSIM	1794-86-1	5	Liquid	**	**	**
37	CHLOROSULFONIC ACID	7790-94-5	5	Liquid	**	**	**
38	DIMETHYLSUFATE	77-78-1	5	Liquid	TWA 1 ppm	TWA 0.1 ppm	7 ppm
39	METHANESULFONY CHLORIDE	124-63-0	5	Liquid	**	**	**
40	DIPHENYLMETHANE4*DIISOCYANATE	101-68-8	5	Liquid	P 0.02 ppm	TWA 0.005 ppm- C 0.020 ppm	75 mg/m <sup>3</sup>
41	ISOPROPYL ISOCYANATE	1795-48-8	5	Liquid	**	**	**
42	TERT-BUTYL ISOCYANATE	1609-86-5	5	Liquid	**	**	**
43	TETRAETHYL PYROPHOSPHATE	107-49-3	5	Liquid	TWA 0.05 mg/m <sup>3</sup>	TWA 0.05 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>
44	TDI TOLUENE DIISOCYANATE	26471-62-5	5	Liquid	**	**	**
45	HN-1 NITROGEN IPERITBIS	538-07-8	6	Liquid	**	**	**
46	ED ETHYLDICLOARSIN	598-14-1	6	Liquid	**	**	**
47	1.2 DIMETHYLHYDRAZINE	540-73-8	6	Liquid	**	**	**
48	TERT-OCTYK MERCAPTAN	111-88-6	6	Liquid	**	**	**
49	ETHYL PHOSOHONOTHIONIC DICHLORIDE	993-43-1	6	Liquid	**	**	**
50	DP DIFOSGEN	503-38-8	7	Liquid	**	**	**
51	HN-2 NITROGEN IPERIT	51-75-2	7	Liquid	**	**	**
52	HN-3 NITROGEN IPERITRIS	555-77-1	7	Liquid	**	**	**
53	PD PHENYLDICHLOROARCIN	696-28-6	7	Liquid	**	**	**
54	MD METHYLDICLOARSIN	593-89-5	7	Liquid	**	**	**
55	SULPHURIC ACID	7664-93-9	7	Liquid	TWA 1 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>
56	PHOSPHORUS TRICHLORIDE	7719-12-02	7	Liquid	TWA 0.5 ppm	TWA 0.2 ppm	25 ppm
57	PHOSPHORUS PENTALLURIDE	7647-19-0	7	Gas	**	**	**
58	SULFURLY CHLORIDE	7791-25-5	7	Liquid	**	**	**
59	ALLYL ISOTHIOCYANATE	57-06-7	7	Liquid	**	**	**
60	ARSENIC TRICHLORIDE	7784-34-1	7	Liquid	TWA 0.010 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>
61	CYANOGEN	460-19-5	7	Gas	**	TWA 10 ppm	**
62	ETHYL PHOSPHONOUS DICHLORIDE	1498-40-4	7	Liquid	**	**	**
63	PARATHION	56-38-2	7	Liquid	TWA 0.1 mg/m <sup>3</sup>	TWA 0.2 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
64	PERCHLOROMETHYL MERCAPTAN	594-42-3	7	Liquid	TWA 0.1 ppm	TWA 0.1 ppm	10 ppm
65	SULFURLY FLOURIDE	2699-79-8	7	Gas	TWA 5 ppm	TWA 5 ppm - ST 10 ppm	200 ppm
66	METHLY HYDRAZINE	60-34-4	7	Liquid	C 0.2 ppm	C 0.04 ppm	20 ppm

\* Phase state of the chemical at room temp.

\*\* Data not given / Not in List / Value of Zero

\*\*\* NIOSH-REL recommended limit

\*\*\*\*OSHA-PEL allowable limit

\*\*\*\*\* IDHL Instant allowed limit