

CURRICULUM VITAE

POL HOORELBEKE

EDUCATION

Master Degree in Electro-Mechanical Engineering

Master Degree in Safety

PhD Research “**Numerical and Experimental Study of Vapour Cloud Explosions – Mitigation by Inhibitors**”



PROFESSIONAL EXPERIENCE

About 25 years of experience in the field of HSE :

2007-	TOTAL	<i>Vice President Health, Safety and Environment</i>
2004– 2007	TOTAL	<i>General Manager Health and Safety</i>
2003– 2004	TOTAL	<i>General Manager HSE Base Chemicals</i>
2002 – 2003	TOTAL	<i>Process Safety Manager Base Chemicals</i>
1991 - 2002	Det Norske Veritas	<i>Managing Principal Engineer</i>
1987 – 1991	Vinçotte	<i>Head of section Environment and Safety</i>
1985 – 1987	Belgian Army	<i>Officer - Assistant workshop manager</i>

During the period of consultant (1987 – 2002) Pol performed about 350 HSE related studies. A comprehensive list of 270 jobs (for the period 1987-1999) in which Pol was involved (as main author) is given at the end.

ISRS Accredited Safety Auditor since 1997.

Member of the Technical Experts Group on the Buncefield Explosion Mechanism

Leader of the TOTAL CTG Safety Engineering Network

PUBLICATIONS AND LECTURES

Training courses in the field of HSE has been given at different universities including:

EUROPE

- IFP, Institut de Petrole, France (2005, 2006, 2008);
- Vrije Universiteit Brussel (2005, 2006, 2007)
- Katholieke Universiteit Leuven (2010)
- ENSPM, France, April 2006;
- Ecole Centrale de Paris (2009, 2010)
- Several ICSI Trainings at Lyon, Luton (London) and Antwerp (2005-2009)
- Universiteit Antwerpen (UAMS) (2005 – 2008)

OVERSEAS

- Beijing University of Chemical Technology, China, 2005;
- Shanghai Fudan University, China, 2005;
- Beijing Petroleum University, China, (2005, 2006);
- East China University of Science and Technology, China, 2006;
- South China University of Technology, China, (2006, 2009, 2011);
- Wuhan University (2006)
- Chengdu University of Technology (March 2008)
- China University of Petroleum Beijing (March 2008)
- Wuhan University (March 2008)
- UTSEUS Shanghai (November 2010)
- ECUST Shanghai (November 2010)

A list of publications is given on the next page.

Publications

L. Hoorelbeke, *Integrale projektbegeleiding in het kader van milieu en veiligheid*, Voordracht op de conferentie "VEILIGHEID- EN MILIEUPLANNEN", Antwerpen, 28 november 1990

L. Hoorelbeke en F. Candreva, *Environmental Risk Assessment : A case study in Belgium*, The Safety and Reliability Society, Symposium, Manchester, 16-17th september 1992

L. Hoorelbeke, *Het gebruik van dispersiemodellen in milieu- en veiligheidsstudies*, Veiligheidsnieuws, september 1992

L. Hoorelbeke, *Wanneer zijn industriële risico's aanvaardbaar*, Veiligheidsnieuws, september 1993

L. Hoorelbeke, *Kwantitatieve risico-analyse van het transport van gevaarlijke stoffen*, 33 pg, IIR conferentie "Transport van gevaarlijke stoffen", Pullman Park Hotel, Antwerpen, 13 & 14 januari 1993

L. Hoorelbeke, *Veiligheid en Betrouwbaarheid*, 29 pagina's, KVCV studiedag "Veiligheid van Installaties in de chemische industrie, Mechelen, 11 februari 1993

L. Hoorelbeke, *Zin en Uitvoering van Veiligheidsstudies*, 78 pagina's, Lezing voor de laatstejaarsstudenten van het KIH, Oostende, 9 februari 1993

L. Hoorelbeke, *QRA - Nut en praktische aanpak*, 26 pagina's, lezing voor de postuniversitaire cursus "Milieusanering", Gent, 26 mei 1993

L. Hoorelbeke, *Risico-identificatietechnieken - Situeren van de context*, 36 pagina's, Studiedag VIK, Hof ter Delft, Ekeren, 23 maart 1995

L. Hoorelbeke, *To Rainout or not to rainout, is that the question ? - deel I*, Veiligheidsnieuws N° 108, september 1995

L. Hoorelbeke, *To Rainout or not to rainout, is that the question ? - deel II*, Veiligheidsnieuws N° 109, september 1995

Hoorelbeke, Kummer, *Analyse des risques*, Studiedag CRESEPT "Le Management des Risques Chimique dans l'Entreprise, 21 novembre 1995

Hoorelbeke, *Risico-analyse bij bodemverontreiniging*, IFEST studiedag Gent, Oktober 1998

Hoorelbeke, *The Safety of LPG fuelled vehicles*, AEGPL 2000 Conference The Hague

Hoorelbeke L, Bakke JR, Izatt C, Brewerton RW, Renoult J, *Vapour Cloud Explosion Analysis of Petrochemical Onshore Facilities*, American Society of Safety Engineers, 7th Professional Development Conference and Exhibition, Kingdom of Bahrain, March 18-22, 2006

Prof Van Overmeire, P Hoorelbeke, D Roosendans, Risk Based Design of Chemical Plants, 7th World Congress of Chemical Engineering, Glasgow, 10-14 July 2005

Pol Hoorelbeke, Cees Van Wingerden, Brian Wilkins, Flame Inhibitors to Control Flame Propagation in Congested Environments, Proceedings of the 6th US National Combustion Meeting, May 2009

Pol Hoorelbeke, A Retrospective View of Major Accident Prevention Efforts and a Glance at the Future, Sonatrach's 8th Scientific and Technical Days, Nov 18-19, Algeria – (this presentation was awarded with the Price of Excellence)

Hoorelbeke, Mukharror, Mitigation of Vapour Cloud Explosion Effects by Inhibitors, 2009 SPE Asia Pacific Oil & Gas Conference and Exhibition, Jakarta, Indonesia, August 4-6, 2009

.Hoorelbeke, van Wingerden, Experimental study of inhibition of premixed flames, 22nd International Colloquium on the Dynamics of Explosions and Reactive Systems, Minsk, Belarus, July 27-31, 2009

Bakke JR, van Wingerden K, Hoorelbeke P, Brewerton B, A study of the effect of trees on gas explosions, Journal of Loss prevention in the Process Industries, 2010

Van Wingerden K, Wilkins B, Hoorelbeke P, Mitigation of vapor cloud explosions using flame inhibitors, 13th Int. Symp Loss Prevention Safety Promotion in the Process Industries, Brugge, Belgium, 7-9 June 2010

Hoorelbeke P, Henschger G, Wilkins B, Mitigation of Vapor Cloud Explosions by Inhibitors, 3rd World Conference on Safety of Oil and Gas Industry, China, Beijing, 27-28 Sept 2010

Van Wingerden K, Hoorelbeke P, On the potential of mitigating vapor cloud explosions using flame inhibitors, 7th Global Congress Process Safety, Chicago, Illinois, March 13-16, 2011

Detailed overview of some HSE related studies (period 1987-1999)

#	Client	Location	Country	Year	Industry	Subject	Type
1	Boucquillon	Deerlijk	Belgium	1987	Chemical	Chemical storage terminal	Layout study
2	Montefina	Feluy	Belgium	1988	Chemical	Polypropylene plant	Consequence calculations
3	Montefina	Feluy	Belgium	1988	Chemical	Ethylene/Propylene	Consequence calculations
4	Air Liquide	Luxemburg	Luxemburg	1988	Chemical	Air separation plant	QRA study
5	Boucquillon	Deerlijk	Belgium	1988	Chemical	Chemical storage terminal	QRA study
6	Keyser & Mackay	Brussels	Belgium	1988	Chemical	Warehouse storage	QRA study
7	Roland	Anderlecht	Belgium	1988	Chemical	Chemical storage terminal	QRA study
8	Tessenderlo Chemie	Tessenderlo	Belgium	1988	Chemical	Glycine production plant	QRA study
9	Amoco Chemicals	Geel	Belgium	1988	Chemical	Polypropylene plant	Seveso notification report
10	Mobil Oil	Achenne	Belgium	1988	Chemical	LPG storage	Seveso notification report
11	Pantochim	Feluy	Belgium	1988	Chemical	Maleic Acid production plant	Seveso notification report
12	Pantochim	Feluy	Belgium	1988	Chemical	Butane storage	Seveso notification report
13	KS Waterschei	Waterschei	Belgium	1988	Coal	Coal dryer (60 t/hr)	Hazard Identification (FMEA)
14	Wiggings tape	Nijvel	Belgium	1988	Paper	Paper treatment installation	Risk Management study
15	Solvay	Jemeppe s/ Sambre	Belgium	1989	Chemical	DCE column (internal explosion)	Consequence calculations
16	Lilachim	Oelegem	Belgium	1989	Chemical	Ammonia storage	Consequence calculations
17	Gamatex	Antwerpen	Belgium	1989	Chemical	Propylene heat exchanger	Hazard Identification (HAZOP)
18	Air Liquide	Marchienne	Belgium	1989	Chemical	Air separation plant	QRA study
19	BP	Betrange	Luxemburg	1989	Chemical	gasolines storage	QRA study
20	EuroCompound	Oudenaarde	Belgium	1989	Chemical	Latex compounding facility	QRA study
21	Solvay	Jemeppe s/ Sambre	Belgium	1989	Chemical	propylene storage	QRA study
22	Ethyl	Feluy	Belgium	1989	Chemical	alfa-olefins production plant	Seveso notification report
23	Gamatex	Antwerp	Belgium	1989	Chemical	Terminal (111000 m3 chemicals/ 350000 m3 oils/21000 liquified gases)	Seveso notification report
24	Total	Brussels	Belgium	1989	Chemical	Chemical storage terminal	Seveso notification report
25	KS Beringen	Beringen	Belgium	1989	Coal	Coal dryer (60 t/hr)	Hazard Identification (FMEA)
26	KS Zolder	Zolder	Belgium	1989	Coal	Coal dryer (60 t/hr)	Hazard Identification (FMEA)
27	Gandagas	Gent	Belgium	1989	Gas	LPG storage	Seveso notification report
28	Belgian Refining Corporation	Antwerpen	Belgium	1989	Refinery	Several units	Hazard Identification (FMEA)
29	Finaneste	Antwerpen	Belgium	1990	Chemical	polyethylene and ABS production	Emergency planning
30	Gamatex	Antwerp	Belgium	1990	Chemical	Terminal	Emergency planning
31	Chemical Production Unit	Oudenaarde	Belgium	1990	Chemical	XBS polymerisation	QRA study
32	Neste Chemicals	Evergem	Belgium	1990	Chemical	Ureumformaldehyde production (50 kt/yr)	QRA study
33	Neste Chemicals	Beringen	Belgium	1990	Chemical	alfa-olefins production plant	QRA study
34	Pantochim	Feluy	Belgium	1990	Chemical	Extension MA production plant	QRA study
35	Q8 Petroleum	Luxemburg	Luxemburg	1990	Chemical	gasoline terminal	QRA study
36	Solvay	Antwerpen	Belgium	1990	Chemical	DCE production (250 kt/yr)	QRA study
37	New Carbochim	Tertre	Belgium	1990	Chemical	Polyols production	Seveso notification report
38	Solvay	Antwerpen	Belgium	1990	Chemical	Polypropylene production (80 kt/yr)	Seveso notification report
39	Carcoke Marly	Brussels	Belgium	1990	Coal	Cokes production installation	QRA study
40	Sunchemicals	Ternat	Belgium	1990	Ink	Ink production	QRA study
41	Smith Kline	Rixensart	Belgium	1990	Pharmaceutical	Hexane explosion in sewers	Hazard Identification (HAZOP)
42	Smith Kline	Rixensart	Belgium	1990	Pharmaceutical	Virginyamicine production	QRA study
43	Smith Kline	Rixensart	Belgium	1990	Pharmaceutical	Ardacine production	Special (dust explosion expertise)

#	Client	Location	Country	Year	Industry	Subject	Type
44	Chemical Production Unit	Evergem	Belgium	1991	Chemical	XBS polymerisation - control room	Building siting
45	Gamatex	Antwerpen	Belgium	1991	Chemical	Terminal - location of a new building	Building siting
46	Gamatex	Antwerpen	Belgium	1991	Chemical	Terminal - tankemissions	Consequence calculations
47	Prayon Rupel	Engis	Belgium	1991	Chemical	NH3 and SO2 storage	Consequence calculations
48	Finaneste	Antwerpen	Belgium	1991	Chemical	PE and ABS production installation	Dow Fire & Explosion Calculations
49	Petrochim	Antwerpen	Belgium	1991	Chemical	Chlorine storage	Emergency planning
50	Chemical Production Unit	Evergem	Belgium	1991	Chemical	XBS polymerisation plant	Fire Safety Study
51	Pantochim	Feluy	Belgium	1991	Chemical	Butane distillation	Hazard Identification (HAZOP)
52	Pantochim	Feluy	Belgium	1991	Chemical	production of tetrahydroftalic acid (20 kt/yr) and hexahydroftate (15 kt/yr)	Hazard Identification (HAZOP)
53	Chemical Production Unit	Oudenaarde	Belgium	1991	Chemical	butadiene storage	QRA study
54	Pantochim	Feluy	Belgium	1991	Chemical	production of tetrahydroftalic acid (20 kt/yr) and hexahydroftate (15 kt/yr)	QRA study
55	Pantochim	Feluy	Belgium	1991	Chemical	Butane and isoprene storage	QRA study
56	Chemical Production Unit	Oudenaarde	Belgium	1991	Chemical	Probability of leak in the ACN feedline	Reliability study
57	Technical High School	Luxemburg	Luxemburg	1991	Education	Explosion in workshop (4 people killed)	Accident investigation
58	Ecolas	Antwerpen	Belgium	1991	Engineering	butane feedline	Consequence calculations
59	Distrigas	Anderlues	Belgium	1991	Gas	Underground natural gasstorage (182 Mm3)	QRA study
60	Smith Kline	Rixensart	Belgium	1991	Pharmaceutical	Cefonicid production	Hazard Identification (HAZOP)
61	Smith Kline	Rixensart	Belgium	1991	Pharmaceutical	Rixapen production	Hazard Identification (Human task Analysis)
62	Helvoet Pharma	Alken	Belgium	1991	Pharmaceutical	Fluor storage	QRA study
63	Helvoet Pharma	Alken	Belgium	1991	Pharmaceutical	Fluor sterilisator	Reliability study
64	Ministerie van Leefmilieu	Brussels	Belgium	1992	Authority	PHAST	Course
65	Solvay	Antwerpen	Belgium	1992	Chemical	H2 tube trailer - Cl2 vessel	Consequence calculations
66	Dow Corning	Feluy	Belgium	1992	Chemical	HAZOP	Course
67	Gamatex	Antwerpen	Belgium	1992	Chemical	Terminal	Dow Fire & Explosion Calculations
68	Degussa	Antwerpen	Belgium	1992	Chemical	Cl2 and acroleine storage	Emergency planning
69	Finaneste	Antwerpen	Belgium	1992	Chemical	Polyethylene production	Emergency planning
70	Gamatex	Antwerpen	Belgium	1992	Chemical	Terminal	Emergency planning
71	Solvay	Antwerpen	Belgium	1992	Chemical	Cl2 electrolyse plant and Cl2 storage	Emergency planning
72	Panocean	Antwerpen	Belgium	1992	Chemical	Terminal (465000 m3 chemicals)	Flemish notification report (VR)
73	Chemical Production Unit	Oudenaarde	Belgium	1992	Chemical	PLC automatisisation of certain processes	Hazard Identification (HAZOP)
74	Chemical Production Unit	Oudenaarde	Belgium	1992	Chemical	XBS reactors	Hazard Identification (HAZOP)
75	Solvay	Brussels	Belgium	1992	Chemical	VC/DCE unit - Thailand	Hazard Identification (HAZOP)
76	Boucquillon	Deerlijk	Belgium	1992	Chemical	New chemical storage terminal	QRA study
77	Unilin		Belgium	1992	Chemical	Chemical storage	Reliability study
78	Gamatex	Antwerpen	Belgium	1992	Chemical	DCE storage tank	Special (literature study on corrosion)
79	Vamo Mills	Izegem	Belgium	1992	Food	Storage and conveying flakes	QRA study
80	Vandemoortele	Izegem	Belgium	1992	Food	Oil refinery	QRA study
81	Gerling Consulting Group	Brussels	Belgium	1992	Insurance	Explosion at BRC	Accident Investigation
82	Fina Raffinaderij Antwerpen	Antwerpen	Belgium	1992	Refinery	HF Alkylation unit - HF release	Consequence calculations
83	Gemeente Stein	Stein	Netherlands	1992	Transport	Ethylene cross country pipeline	QRA study
84	VROM	Den Haag	Netherlands	1992	Transport	Marshalling Yard (Venlo)	QRA study
85	VROM	Den Haag	Netherlands	1992	Transport	Marshalling Yard (Hengelo)	QRA study
86	VMM	Mechelen	Belgium	1993	Authority	Guidance on risk management for the Flemisch Authorities	Special (MIRA report)
87	Finaneste	Antwerpen	Belgium	1993	Chemical	PE and ABS production installation - location of buildings	Building siting

#	Client	Location	Country	Year	Industry	Subject	Type
88	Chemical Production Unit	Oudenaarde	Belgium	1993	Chemical	XBS and VAC pproduction, storage facilities	Emergency planning
89	Prayon Engis	Engis	Belgium	1993	Chemical	Phosphor extraction/purification unit at Puurs	Fire Safety Study
90	Prayon Rupel	Puurs	Belgium	1993	Chemical	Phosphor extraction/purification unit at Engis	Fire Safety Study
91	Chemical Production Unit	Oudenaarde	Belgium	1993	Chemical	Butadiene and styrene loading/unloading	Hazard Identification (HAZOP)
92	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1993	Chemical	790 system (Mercansol-L synthese)	Hazard Identification (HAZOP)
93	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1993	Chemical	H2S recuperation unit	Hazard Identification (HAZOP)
94	Petrochim	Antwerpen	Belgium	1993	Chemical	PE and ABS production installation	QRA study
95	Panocean	Hemiksem	Belgium	1993	Chemical	Terminal	Seveso notification report
96	Finaneste	Antwerpen	Belgium	1993	Chemical	PE and ABS production installation - location of buildings	Special (literature study on explosion impacts on buildings)
97	Haecon	Gent	Belgium	1993	Maritime	sea lock of Terneuzen	Hazard Identification (FMEA)
98	Haecon	Gent	Belgium	1993	Maritime	sea lock of Terneuzen	Risk Management study
99	Neddrill	Northsea	Netherlands	1993	Offshore	QRA for a mobile drilling rig "Neddril Trigon"	QRA study
100	Neddrill	Northsea	Netherlands	1993	Offshore	QRA for a mobile drilling rig "Neddril 7"	QRA study
101	Neddrill	Northsea	Netherlands	1993	Offshore	QRA for a mobile drilling rig "Neddril 3"	QRA study
102	Neddrill	Northsea	Netherlands	1993	Offshore	QRA for a mobile drilling rig "Neddril 4"	QRA study
103	Institute of Petroleum	Brussels	Belgium	1993	Transport	Risk Analysis of vapor recovery systems for truck loading/unloading - development of computercode	QRA study
104	VROM	Den Haag	Netherlands	1993	Transport	Risk Analysis of vapor recovery systems for barge loading	QRA study
105	AMINAL	Brussels	Belgium	1994	Authority	Handboek Kanscijfers	Reliability study
106	Prayon Rupel	Puurs	Belgium	1994	Chemical	Accident in Phosphor purification unit	Accident Investigation
107	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1994	Chemical	Mercaptans production units - H2S release	Consequence calculations
108	Solvay	Sarralbe	France	1994	Chemical	Polypropylene production unit	Consequence calculations
109	Albemarle	Feluy	Belgium	1994	Chemical	HAZOP, FMEA, SWIFT, FTA, ETA, HRA, QRA	Course
110	GEP	Bergen op Zoom	Netherlands	1994	Chemical	HAZOP, FMEA, SWIFT, FTA, ETA, HRA, QRA	Course
111	Shell Laboratorium	Rijswijk	Netherlands	1994	Chemical	HAZOP	Course
112	Air Liquide	Seraing	Belgium	1994	Chemical	Air separation plant	Emergency planning
113	Paktank	Antwerpen	Belgium	1994	Chemical	Tank terminal	Flemish notification report (VR)
114	Chemical Production Unit	Oudenaarde	Belgium	1994	Chemical	XBS production (from batch to continues operation)	Hazard Identification (HAZOP)
115	TMP	Oudenaarde	Belgium	1994	Chemical	Vinylacetate reactors	Hazard Identification (HAZOP)
116	Air Liquide	Antwerpen	Belgium	1994	Chemical	H2 compression station	QRA study
117	GEP	Bergen op Zoom	Netherlands	1994	Chemical	H2 compression and O2 storage	QRA study
118	UCB	Oostende	Belgium	1994	Chemical	SO2 storage	QRA study
119	Solvay	Jemeppe s/ Sambre	Belgium	1994	Chemical	H2O2 storage	Seveso notification report
120	Air Liquide	Seraing	Belgium	1994	Chemical	Air separation plant	Special (Inventarisatie of legal requirements in Wallonie)
121	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1994	Chemical	H2S release	Special (Study of a water curtain)
122	All Seas	Leiden	Netherlands	1994	Offshore	HAZOP, FMEA, SWIFT, FTA, ETA, HRA, QRA	Course
123	Becton Dickinson	Grenoble	France	1994	Pharmaceutical	EO sterilisation unit	Hazard Identification (HAZOP)
124	Total Raffinaderij Vlissingen	Vlissingen	Netherlands	1994	Refinery	HAZOP	Course
125	Belgian Refining Corporation	Antwerpen	Belgium	1994	Refinery	Units 200 and loading/unloading facilities	Hazard Identification (FMEA)
126	Belgian Refining Corporation	Antwerpen	Belgium	1994	Refinery	Isomerisation unit (unit 1100)	Hazard Identification (FMEA)
127	Belgian Refining Corporation	Antwerpen	Belgium	1994	Refinery	Atmospheric distillation unit (unit 100)	Hazard Identification (FMEA)
128	Belgian Refining Corporation	Antwerpen	Belgium	1994	Refinery	Desulphurisation unit (unit 1100)	Hazard Identification (HAZOP)
129	Several	Brussels	Belgium	1994		Open HAZOP course	Course
130	Solvay	Sarralbe	France	1995	Chemical	Polyethylene production unit	Consequence calculations

#	Client	Location	Country	Year	Industry	Subject	Type
131	Crosfield	Eijsden	Netherlands	1995	Chemical	1 st HAZOP course	Course
132	Crosfield	Maastricht	Netherlands	1995	Chemical	2 nd HAZOP course	Course
133	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1995	Chemical	Risk Management course	Course
134	Prayon Rupel	Engis	Belgium	1995	Chemical	HAZOP	Course
135	Servo Delden	Hengelo	Netherlands	1995	Chemical	HAZOP	Course
136	Prayon Rupel	Engis	Belgium	1995	Chemical	NH3 and SO2 storage	Emergency planning
137	Euroftal	Oostende	Belgium	1995	Chemical	New solvent tank farms	Fire Safety Study
138	Amoco Chemicals	Geel	Belgium	1995	Chemical	2 polypropylene and 3 ftalic acid production installations	Flemish notification report (VR)
139	Chemical Production Unit	Oudenaarde	Belgium	1995	Chemical	XBS, VAC production and storage facilities	Flemish notification report (VR)
140	Fina Polymers	Antwerpen	Belgium	1995	Chemical	ABS and PE production sites	Flemish notification report (VR)
141	Kaneka	Westerlo	Belgium	1995	Chemical	(M)BS and MS production site	Flemish notification report (VR)
142	Prayon Rupel	Puurs	Belgium	1995	Chemical	Complete site at Puurs	Flemish notification report (VR)
143	Degussa	Antwerpen	Belgium	1995	Chemical	Homogenisation installation	Hazard Identification (HAZOP)
144	Degussa	Antwerpen	Belgium	1995	Chemical	HCN production	Hazard Identification (HAZOP)
145	Prayon Rupel	Engis	Belgium	1995	Chemical	SMARP process	Hazard Identification (HAZOP)
146	Prayon Rupel	Engis	Belgium	1995	Chemical	Production Bleu d'Outremer	Hazard Identification (HAZOP)
147	Prayon Rupel	Puurs	Belgium	1995	Chemical	SO2 storage	Hazard Identification (HAZOP)
148	Pantochim	Feluy	Belgium	1995	Chemical	Production of plastics	Hazard Identification (SWIFT)
149	Euroftal	Oostende	Belgium	1995	Chemical	New Tank farms	QRA study
150	GEP	Bergen op Zoom	Netherlands	1995	Chemical	Extension chlorine storage - influence on overall risk	QRA study
151	GEP	Bergen op Zoom	Netherlands	1995	Chemical	Silicones project	QRA study
152	Chemical Production Unit	Oudenaarde	Belgium	1995	Chemical	ACN, EHA and MMA storage	Special (multi criteria analysis)
153	Distrigas	Peronnes	Belgium	1995	Gas	Underground gas storage	QRA study
154	Gasunie	Ravenstein	Belgium	1995	Gas	Compression (booster) station	QRA study
155	Neddril	Rotterdam	Netherlands	1995	Offshore	HAZOP	Course
156	Pfizer	Rixensart	Belgium	1995	Pharmaceutical	VOC Abatement installation	Hazard Identification (HAZOP)
157	Pfizer	Rixensart	Belgium	1995	Pharmaceutical	Calculation of offsite risks	QRA study
158	Esso	Antwerpen	Belgium	1995	Refinery	cryogenic ethylene storage	QRA study
159	HERMES	Brussels	Belgium	1995	Telcommunicatio n	European Optic Fiber network	Hazard Identification (SWIFT)
160	Fina Borealis	Antwerpen	Belgium	1995	Transport	Development of a computercode to assist and train emergency operations on propylene cross country pipe plasmatron	Emergency planning Hazard Identification (SWIFT)
161	Von Karman Institute	Waterloo	Belgium	1996	Academic		
162	AMINAL	Brussels	Belgium	1996	Authority	Risk Analysis and Risk Assessment	Course
163	Fina Chemicals	Feluy	Belgium	1996	Chemical	ISRS pre-audit	Audit
164	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1996	Chemical	Mercaptans production units - buildings	Building siting (API RP752)
165	Amoco Chemical	Feluy	Belgium	1996	Chemical	Hexene distillation column	Consequence calculations
166	UCB	Gent	Belgium	1996	Chemical	HAZOP	Course
167	UCB	Drogenbos	Belgium	1996	Chemical	HAZOP	Course
168	Fina Antwerp Olefins	Antwerpen	Belgium	1996	Chemical	ERTA (Emergency Response Task Analysis)	Emergency planning
169	Gamatex	Antwerp	Belgium	1996	Chemical	Tank Terminal	Flemish notification report (VR)
170	Chemical Production Unit	Oudenaarde	Belgium	1996	Chemical	Vapor collection system	Hazard Identification (HAZOP)
171	Degussa	Antwerpen	Belgium	1996	Chemical	chlorine feed from Solvay to Degussa	Hazard Identification (HAZOP)
172	GEP	Madrid	Spain	1996	Chemical	DMC unit (3 weeks)	Hazard Identification (HAZOP)
173	GEP	Madrid	Spain	1996	Chemical	DPC unit (3 weeks)	Hazard Identification (HAZOP)
174	GEP	Madrid	Spain	1996	Chemical	CO unit (3 weeks)	Hazard Identification (HAZOP)

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175	GEP	Madrid	Spain	1996	Chemical	BPA Flakes (1 week)	Hazard Identification (HAZOP)
176	GEP	Madrid	Spain	1996	Chemical	Pilot plant (1 week)	Hazard Identification (HAZOP)
177	GEP	Madrid	Spain	1996	Chemical	Utilities (1 week)	Hazard Identification (HAZOP)
178	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1996	Chemical	H2S recuperation unit - extension	Hazard Identification (HAZOP)
179	Air Liquide	Antwerpen	Belgium	1996	Chemical	Extension of hydrogen compressor unit	QRA study
180	Air Liquide	Antwerpen	Belgium	1996	Chemical	New Air separation plant (3000 t/day)	QRA study
181	Euroftal	Oostende	Belgium	1996	Chemical	Esterification (production of ftalates)	QRA study
182	GEP	Bergen op Zoom	Netherlands	1996	Chemical	Cartagena site	QRA study
183	LPU	Evergem	Belgium	1996	Chemical	Butadiene loading/unloading	QRA study
184	Prayon Rupel	Engis	Belgium	1996	Chemical	Production installation of sodiumhydrosulfite	QRA study
185	Gamatex	Antwerpen	Belgium	1996	Chemical	8 sferes (5 x 2800 m3 and 3 x 1600 m3)	Special (BLEVE mitigation)
186	SWERS	Diepenbeek	Belgium	1996	Gas	gasbottles	QRA study
187	Smith Kline Beecham	Rixensart	Belgium	1996	Pharmaceutical	Protection of building against heat radiation	Fire Safety Study
188	Becton Dickinson	Grenoble	France	1996	Pharmaceutical	EO sterilisation unit - extension	Hazard Identification (HAZOP)
189	Smith Kline Beecham	Rixensart	Belgium	1996	Pharmaceutical	Calculation of offsite risks	QRA study
190	SIDMAR	Gent	Belgium	1996	Steel	HAZOP, SWIFT, FMEA and FTA	Course
191	Solvay	Sarralbe	France	1996	Transport	propylene and ethylene cross country pipelines	QRA study
192	DCMR	Den Haag	Netherlands	1997	Authority	Risk Analysis and Risk Assessment	Course
193	Fina Chemicals Feluy	Feluy	Belgium	1997	Chemical	ISRS audit	Audit
194	CNO	Oostende	Belgium	1997	Chemical	HAZOP Leader	Course
195	Fina Chemicals	Feluy	Belgium	1997	Chemical	HAZOP Leader	Course
196	New Carbochim	Tertre	Belgium	1997	Chemical	Short "Modern Safety Management" Course (2 x 1 day)	Course
197	Oleofina	Ertvelde	Belgium	1997	Chemical	Short "Modern Safety Management" Course (3 x 1 day)	Course
198	Oleofina	Oelegem	Belgium	1997	Chemical	Short "Modern Safety Management" Course (2 x 1 day)	Course
199	GEP	Madrid	Spain	1997	Chemical	DMC unit - FEI and CEI calculations	Dow Fire & Explosion Calculations
200	GEP	Madrid	Spain	1997	Chemical	DPC unit - FEI and CEI calculations	Dow Fire & Explosion Calculations
201	GEP	Madrid	Spain	1997	Chemical	CO unit - FEI and CEI calculations	Dow Fire & Explosion Calculations
202	Fina Chemicals Antwerpen	Antwerpen	Belgium	1997	Chemical	HDPE and rubber plant	Flemish notification report (VR)
203	GEP	Bergen op Zoom	Netherlands	1997	Chemical	Vent Treatment Unit, Utilities and Waste water of siloxanen plant	Hazard Identification (HAZOP & SWIFT)
204	GEP de Espana	Cartagena	Spain	1997	Chemical	Mechanical Completion Hazop DMC unit	Hazard Identification (HAZOP & SWIFT)
205	GEP de Espana	Cartagena	Spain	1997	Chemical	Mechanical Completion Hazop DPC unit	Hazard Identification (HAZOP & SWIFT)
206	GEP de Espana	Cartagena	Spain	1997	Chemical	Mechanical Completion Hazop CO unit	Hazard Identification (HAZOP & SWIFT)
207	GEP de Espana	Cartagena	Spain	1998	Chemical	Mechanical Completion Hazop Pilot unit	Hazard Identification (HAZOP & SWIFT)
208	GEP de Espana	Cartagena	Spain	1998	Chemical	Mechanical Completion Hazop BPA unit	Hazard Identification (HAZOP & SWIFT)
209	GEP de Espana	Cartagena	Spain	1998	Chemical	Mechanical Completion Hazop Polymer unit	Hazard Identification (HAZOP & SWIFT)
210	GEP de Espana	Cartagena	Spain	1998	Chemical	Hazop new BPA reactors	Hazard Identification (HAZOP & SWIFT)
211	GEP de Espana	Cartagena	Spain	1998	Chemical	Mechanical Completion Hazop Finishing unit	Hazard Identification (HAZOP & SWIFT)
212	GEP de Espana	Cartagena	Spain	1998	Chemical	Hazop Finishing stretch	Hazard Identification (HAZOP & SWIFT)
213	GEP de Espana	Cartagena	Spain	1998	Chemical	Hazop V-66720 drum	Hazard Identification (HAZOP & SWIFT)
214	GEP de Espana	Cartagena	Spain	1998	Chemical	DMC lab reactor	Hazard Identification (HAZOP & SWIFT)
215	GEP	Madrid	Spain	1997	Chemical	Emergency Shutdown System (1 week)	Hazard Identification (HAZOP)
216	UCB	Drogenbos	Belgium	1997	Chemical	VOC Treatmnet unit	Hazard Identification (HAZOP)
217	Amoco Chemicals Feluy	Feluy	Belgium	1997	Chemical	Modifications in alfaolefinen production (5 weeks)	Hazard Identification (HAZOP)
218	New Carbochim	Tertre	Belgium	1997	Chemical	Polyolen Pilot Plant	Hazard Identification (PROCEDURE HAZOP)

#	Client	Location	Country	Year	Industry	Subject	Type
219	Amoco Chemicals Feluy	Feluy	Belgium	1997	Chemical	Comparison between several configurations of Triplex positive displacement pumps for LAO plant	Reliability Study
220	Fina Chemicals Feluy	Feluy	Belgium	1997	Chemical	First phase : Art. 27 bis report Polypropylene plant	Seveso notification report
221	Foster Wheeler	Madrid	Spain	1997	Engineering	HDS HAZOP (1 week)	Hazard Identification (HAZOP)
222	Fina Belgium	Brussels	Belgium	1997	Petrochemical	ISSRS audit	Audit
223	Fina Belgium	Brussels	Belgium	1997	Petrochemical	MSM course	Course
224	Pfizer Europe SA	Rixensart	Belgium	1997	Pharmaceutical	Investigation need for renewal QRA	Audit
225	SmithKline Beecham	Rixensart	Belgium	1997	Pharmaceutical	Investigation need for renewal QRA	Audit
226	Pfizer Europe SA	Rixensart	Belgium	1997	Pharmaceutical	VOC Abatement 2	Hazard Identification (HAZOP)
227	Beechem	Heppignies	Belgium	1997	Pharmaceutical	DMC recuperation	Hazard Identification (HAZOP)
228	Janssen Pharmaceutica	Geel	Belgium	1997	Pharmaceutical	Water treatment unit	Hazard Identification (SWIFT)
229	Pfizer Europe SA	Rixensart	Belgium	1997	Pharmaceutical	Productie "oxytetracycline" en "doxycycline"	Hazard Identification (SWIFT)
230	Janssen Pharmaceutica	Beerse	Belgium	1997	Pharmaceutical	Productie zalven	Hazard Identification (SWIFT)
231	Fina Chemicals Feluy	Feluy	Belgium	1997	Chemical	ISSRS audit	Audit
232	Janssen Pharmaceutica	Beerse	Belgium	1998	Pharmaceutical	New Research Center (80.000 m ² - 3 stage building)	Hazard Identification (HAZOP & SWIFT)
233	Fina Chemicals Feluy	Feluy	Belgium	1998	Chemical	MSM course - 9 x 3-day course	Course
234	Air Liquide Mons	Mons	Belgium	1998	Chemical	Air separation plant	Seveso Notification report
235	Fina Chemicals Feluy	Feluy	Belgium	1998	Chemical	new PP3 plant	Seveso Notification report
236	Fina Chemicals Feluy	Feluy	Belgium	1998	Chemical	renewal permit plant - 2 PP, 4 PS & PE unit	Seveso Notification report
237	Carbochim	Tertre	Belgium	1998	Chemical	Crycondensation unit	Hazard Identification (HAZOP)
238	Amoco Chemicals Feluy	Feluy	Belgium	1998	Chemical	PAO C12B project	Hazard Identification (HAZOP)
239	Janssen Pharmaceutica	Beerse	Belgium	1998	Pharmaceutical	Aseptic formulation	Hazard Identification (HAZOP & SWIFT)
240	Raychem Chemicals	Kessel Lo	Belgium	1998	Chemical	ISRS audit	Audit
241	Fina Lubrificants	Ertvelde	Belgium	1998	Chemical	MSM course	Course
242	SECO	Ribecourt	France	1998	Chemical	QRA study ammonia storage	QRA study
243	GEP	Beauvais	France	1998	Chemical	Hazop study ABS reactor R11	Hazard Identification (HAZOP)
244	GEP	Beauvais	France	1998	Chemical	Hazop study ABS reactor R25	Hazard Identification (HAZOP)
245	Raychem	Menlo Park, California	USA	1998	Electronics	ISRS audit	Audit
246	Unilever	Cassablanca	Marroco	1998	Food	Hazop audit	Audit
247	CNO	Oostende	Belgium	1998	Chemical	Hazop course	Course
248	Euroftal	Oostende	Belgium	1998	Chemical	Hazop study Esterification unit	Hazard Identification (HAZOP)
249	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1998	Chemical	Hazop study unit 755	Hazard Identification (HAZOP)
250	BP Elf	Dunkerque	France	1999	Refinery	Lube oil refinery	Seveso Notification report
251	Eurotunnel	Calais	France	1999	Transport	Risk of transporting LPG vehicles through tunnel	QRA study
252	GEP	Beauvais	France	1999	Chemical	ABS plant	QRA study
253	Euroftal	Oostende	Belgium	1999	Chemical	Hazop study BBP plant	Hazard Identification (HAZOP & SWIFT)
254	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1999	Chemical	Building siting study	QRA study
255	CNO	Oostende	Belgium	1999	Chemical	Hazop course	Course
256	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1999	Chemical	Loading/unloading facility and drumfilling	QRA study
257	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1999	Chemical	System 800 (unloading / loading)	Hazard Identification (HAZOP)
258	Pasminco	Budel	Netherlands	1999	Metalurgy	HAZOP course	Course
259	UCB	Drogenbos	Belgium	1999	Chemical	VOC collecting treatment installation (Radcure II)	Hazard Identification (HAZOP)
260	Fina Europe	Brussels	Belgium	1999	Petrochemical	MSM course	Course
261	GEP de Espana	Cartagena	Spain	1999	Chemical	HAZOP/Swift course	Course
262	Shell	Aardooie	Belgium	1999	Chemical	LPG storage	QRA study

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263	Phillips Petroleum Chemicals	Tessenderlo	Belgium	1999	Chemical	System 710 (utilities)	Hazard Identification (HAZOP)
264	UCB	Gent	Belgium	1999	Chemical	MSM course	Course
265	Euroftal	Oostende	Belgium	1999	Chemical	Hazop/Swift study PSA plant	Hazard Identification (HAZOP & SWIFT)
266	FAO	Antwerp	Belgium	1999	Chemical	MSM course	Course
267	Proviron	Oostende	Belgium	1999	Chemical	Unit 1000	Hazard Identification (HAZOP)
268	Oleofina	Ertvelde	Belgium	1999	Chemical	ISRS audit	Audit
269	Solvay	Sarralbe	France	1999	Chemical	Debottlenecking production PE	QRA study
270	Fina Refinery	Antwerpen	Belgium	1999	Petrochemical	ISRS audit	Audit