

COMAH Inspections – What to expect

Angela Moriarty
Dec 3rd 2015



© Health and Safety Authority

Regulation 22 deals with Inspections

There are 9 paragraphs to the regulation

- 1) Central Competent Authority (CCA) shall devise and organise a national system of inspections
- 2) **Inspections** shall be appropriate to the type of establishment and be **planned** and **systematic**
 - a) **prevent** major accidents
 - b) **limit the consequences**
 - c) **Information** has been supplied to the public



© Health and Safety Authority

- 3) Inspection **plans** shall be prepared and take account of the following
 - a) General assessment of relevant issues
 - b) Geographical area
 - c) List of establishments
 - d) Domino effects
 - e) Particular external risks
 - f) Procedures for routine & non-routine inspections
 - g) Arrangements for cooperation with other inspection authorities
- 4) The CCA must regularly draw up **programmes** for routine inspections for all establishments
 - a) Frequency of site visits for different types of establishment
 - b) Frequency not to exceed 1 year for upper tier establishments
Frequency not to exceed 3 years for lower tier establishments



© Health and Safety Authority

- 5) Deals with the systematic appraisal system referred to in 4)
- 6) Non-Routine Inspections carried out to investigate serious complaints / accidents / near misses and occurrences of non-compliance
- 7) The CCA shall communicate conclusions of inspection and all necessary actions identified to **operator within 4 months** and ensure actions identified are taken within a further reasonable period.



© Health and Safety Authority

- 8) If inspection identifies an important case of non-compliance an **additional** inspection carried out **within 6 months**
- 9) Inspections shall be co-ordinated and combined with other EU legislative inspections as appropriate



© Health and Safety Authority

Paragraph 2 and Paragraph 4

Inspections shall be appropriate to the type of establishment and be **planned** and **systematic**

Take account of Industry Sector
Risk Rating of the site
History of Site Inspection



© Health and Safety Authority

Inspection Topics

LOPA Assessment	MAPP Elements Assessment	Safety Performance Indicators Assessment
MAH issues brought forward from previous inspection	Public Information Check	Sector/topic checklists
RCS Assessment	Environment & domino Information check	Accidents & DO's follow-up
RCS Implementation Assessment	Safety Report follow-up	Human Factors & SCT Assessment
Notification / Inventory Assessment	Internal Emergency Plan Assessment	Other MAH issues

© Health and Safety Authority



Inspection Plans

Topic	2015	2016	2017	Assessment	Checked?
MAH Issues brought forward from previous inspection	1	2	3	Subject to increased scrutiny of system	Yes
2	4	5	6		Yes
3	7	8	9		
4	10	11	12		
5	13	14	15		
6	16	17	18		
7	19	20	21		
8	22	23	24		
9	25	26	27		
10	28	29	30		
11	31	32	33		
12	34	35	36		
13	37	38	39		
14	40	41	42		
15	43	44	45		
16	46	47	48		
17	49	50	51		
18	52	53	54		
19	55	56	57		
20	58	59	60		
21	61	62	63		
22	64	65	66		
23	67	68	69		
24	70	71	72		
25	73	74	75		
26	76	77	78		
27	79	80	81		
28	82	83	84		
29	85	86	87		
30	88	89	90		
31	91	92	93		
32	94	95	96		
33	97	98	99		
34	100	101	102		
35	103	104	105		
36	106	107	108		
37	109	110	111		
38	112	113	114		
39	115	116	117		
40	118	119	120		
41	121	122	123		
42	124	125	126		
43	127	128	129		
44	130	131	132		
45	133	134	135		
46	136	137	138		
47	139	140	141		
48	142	143	144		
49	145	146	147		
50	148	149	150		
51	151	152	153		
52	154	155	156		
53	157	158	159		
54	160	161	162		
55	163	164	165		
56	166	167	168		
57	169	170	171		
58	172	173	174		
59	175	176	177		
60	178	179	180		
61	181	182	183		
62	184	185	186		
63	187	188	189		
64	190	191	192		
65	193	194	195		
66	196	197	198		
67	199	200	201		
68	202	203	204		
69	205	206	207		
70	208	209	210		
71	211	212	213		
72	214	215	216		
73	217	218	219		
74	220	221	222		
75	223	224	225		
76	226	227	228		
77	229	230	231		
78	232	233	234		
79	235	236	237		
80	238	239	240		
81	241	242	243		
82	244	245	246		
83	247	248	249		
84	250	251	252		
85	253	254	255		
86	256	257	258		
87	259	260	261		
88	262	263	264		
89	265	266	267		
90	268	269	270		
91	271	272	273		
92	274	275	276		
93	277	278	279		
94	280	281	282		
95	283	284	285		
96	286	287	288		
97	289	290	291		
98	292	293	294		
99	295	296	297		
100	298	299	300		

© Health and Safety Authority

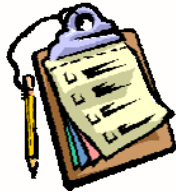
HEALTH AND SAFETY AUTHORITY

Demonstration of measures to prevent major accidents

2 main approaches

RCS Assessment Proforma

Safety Management System Based
13 Developed
Systematic Assessment of Topic



© Health and Safety Authority



RCS Assessment System

Permit to Work	Operating Procedures
Hazard Identification and Risk Assessment	Selection & Management of Contractors
Examination and Testing of Safety Critical Plant	Plant Commissioning / Plant and Process Design
Emergency Response	Planned Maintenance Procedures
Management of Change	Assessing Auditing
Assessing Competence	Process Safety Performance Indicators
	Accident Investigation

© Health and Safety Authority



LOPA approach

Layer of Protection Analysis

Risk Based

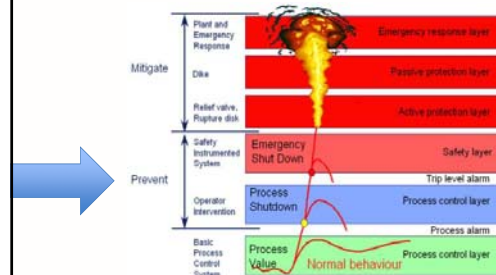
Focus on Major Accident Scenarios & Initiation
Potential



© Health and Safety Authority

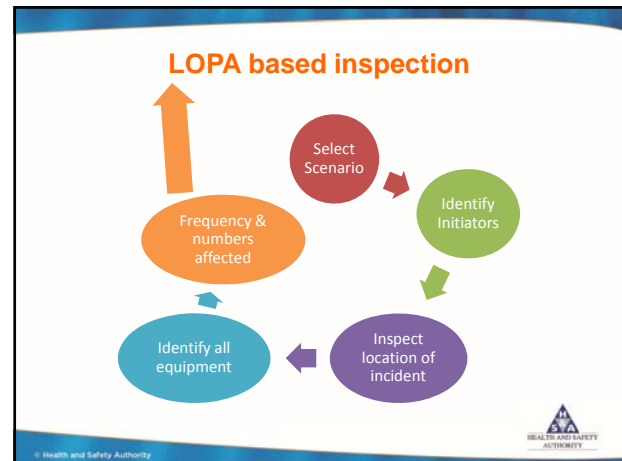
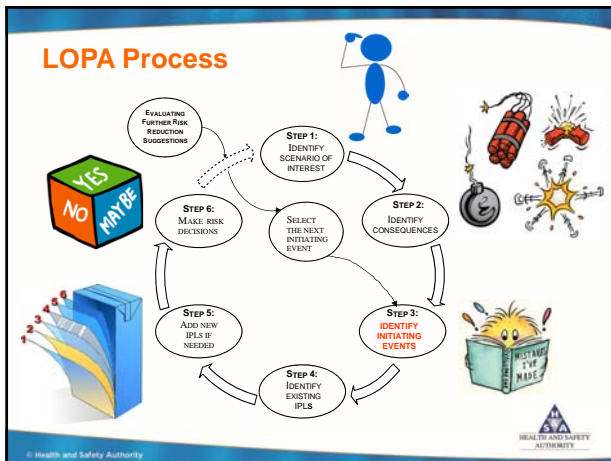


Major Accidents and Layers of Protection



© Health and Safety Authority





LOPA technique

Key: Input required / Dropdown, Optional Entry of descriptive text, Automatically Entered Frequencies/Calculations

Completed by: XT Date: 20/01/2015

Date picker: 1

Layer of Protection Analysis using standard initiating event frequencies and Failure rates for Independent Layers of Protection

Scenario (P&ID/Equipment No.)	Scenario Description:	Scale/Severity of event is mitigated by	Study team
Text	Enter descriptive text	This study does not apply a mitigation factor	See Case Summary, Start
Event Consequence (Description of Harm, to People/Environment)	Enter category here	0	Frequency
Risk Tolerance Criteria			1.00E+00
Control system initiators	Description of possible error	1) Data entry required or N/A	1.00E+00
Human Factor Initiators	Enter descriptive text, then -->	2) BPCS Control Loop Failure	1.00E+00
Other Initiators	Enter descriptive text, then -->	3) BPCS Sensor Failure	1.00E+00
		4) Data entry required or N/A	1.00E+00

Legend for Scale/Severity of event is mitigated by:

- 1) Data entry required or N/A
- 2) BPCS Control Loop Failure
- 3) BPCS Sensor Failure
- 4) Data entry required or N/A

© Health and Safety Authority

ENABLING EVENT OR CONDITION	Probability of Ignition (POI) (Fire or Explosion events only)	Enter text then select -->	Probability 100% or no ignition needed	Probability (read cell comments)
Enabling Event/Conditional Modifiers	Probability that ignition leads to explosion. (Entry in cell E11 required only. If explosion is the hazardous phenomenon, otherwise leave default value of 1)	Enter text then select -->	1.00E+00	1.00E+00
	Probability that personnel will be EXPOSED to scenario consequence in affected area, (occupancy time based/wind direction etc. (Environment always exposed))	Enter text then select -->	Always exposed	1.00E+00
	Other: Enter data in F10	0%	0%	1.00E+00
FREQUENCY OF UNMITIGATED CONSEQUENCES				1.00E+00

© Health and Safety Authority

PROTECTIVE PROTECTION LAYERS (BPCS Shut Down, Alarms, Other Safety Systems and SIS)	PPD (read cell comments)
Alarm and operator response independent of BPCS shut down?	No Independent Alarm Available
BPCS shutdown with shut down	No Independent BPCS Shut Down
Pressure Relief Device - overpressure events	No PRD relevant to scenario
Other Safety Systems Protection Systems or added cross checks	1
Secondary Containment (environmental cases)	Not compliant or not applicable to this case
Tertiary Containment (environmental cases)	Not compliant or not applicable to this case
Safety Instrumented Function A	None
Safety Instrumented Function B	None

© Health and Safety Authority

TOTAL PROBABILITY OF FAILURE ON DEMAND FOR ALL IPLs	1.00E-03
FINAL FREQUENCY OF CONSEQUENCES WHEN ALL FACTORS TAKEN INTO ACCOUNT	4.00E-06
Risk Tolerance Criteria Met?	YES
% of Year that the risk is Present-	0.00004
Consideration of other layers of protection - only to be used if gap is closed and you need to do cost benefit on further IPLs (e.g. test for ALARP)	
Enter text descriptor	
Total Capital Cost of extra IPL	
Cost of maintaining extra IPLs	
Risk Reduction anticipated (Enter Probability of Failure on Demand (PFD) of added protection)	
Anticipated future life of plant (yrs)	
"Value" of Risk Reduction (000's)	
Cost of added IPL over life of plant	0.00E+00
Incremental reduction in frequency per year	4.00E-06
Value of risk reduction over life of plant	0.00
Ratio of Cost of extra IPL/Value of Risk Reduction	

© Health and Safety Authority

Inspection Checklists		
<u>Checklists</u>		
<u>Alarm Handling</u>	<u>Human factors</u>	<u>Safety Critical tasks</u>
<u>Bunds</u>	<u>Operating procedures</u>	<u>Human Factors</u>
<u>EPD</u>	<u>Overflow of tank</u>	
<u>ERP</u>	<u>Management of Change</u>	
<u>Dust</u>	<u>Petroleum stores</u>	
<u>Fertilizers</u>	<u>Planned Maintenance</u>	
<u>Hazard Identification</u>		


Example of Checklist - EPD

Go To: Check

Item	#	Comments	Yes/No	Assessment Comments	Rating
General Level of Assessment	1	Does the operator store or provide combustible or flammable substances?	Yes		10
	2	Does the Operator have an Explosion Protection Document (EPD)?	Yes		20
	3	Does the EPD identify the substances which are combustible/flammable?	Yes		30
Identification	4	Does the EPD identify the substances which are combustible/flammable substances as per?	Yes		40
	5	Does the EPD identify the areas which are used as a building site area?	Yes		50
	6	Associated Equipment Items			60
Equipment & Area Assessment - 3	7	Does EPD confirm this work equipment is suitable for its hazardous area?	Yes		N/A
	8	Are the hazardous areas appropriately identified with signs?	Yes		x-Not selected
	9	Are organizational measures in place?	Yes		A Not selected
Equipment & Area Assessment - 3	10	Associated Equipment Items			
	11	Does EPD confirm this work equipment is suitable for use in hazardous area?	Yes		A Not selected
	12	Are the hazardous areas appropriately identified with signs?	Yes		A Not selected
PSPs	13	Are organizational measures in place?	Yes		A Not selected
	14	Are safety performance indicators reported to and monitored by management in relation to explosion prevention?			A Not selected
Overall Assessment			<input type="text"/>	Overall Rating	<input type="text"/>


10
20
30
40
50
60
N/A
x-Not selected

A Not selected



HEALTH AND SAFETY
AUTHORITY

Health and Safety Authority



**HEALTH AND SAFETY
AUTHORITY**

Cash Registered Office, 5nd Floor, 1/A, South Wing, Connaught, TEL: 01 708 0066
 Interpretation Unit, 1000, South Street, Dublin 1, TEL: 01 457 1713
 Telephone: 1800 222 100 Website: <http://www.hsa.ie>


Title: _____
 Company: _____
 Address: _____

DD/MM/YYYY

Dear "Person in charge of Establishment",

Further to the inspection of your establishment under the COMAH Regulations on DD/MM/YYYY, the following actions are required to be taken by you: / the inspection did not identify any action required to be taken by you. *[Delete as appropriate]*

Item #	Measure related to the prevention and mitigation of major accidents and the action required to be taken by you	Required Completion Date
<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background-color: #0070c0; margin-right: 5px;"></div> <div> <p>The action you to be completed by the date specified, and your attention is drawn to the important action on the specified date.</p> <p>You must ensure that you have addressed details be sent to the inspector at the above given: DD/MM/YYYY</p> <p>You may give a copy of this report of inspection to the safety representative or to the safety committee.</p> </div> </div>		



**HEALTH AND SAFETY
AUTHORITY**

Standard	Description	Score
Best Practice	Operator proactive in identifying and implementing improvements. Use of best practice. All success criteria met. Suggested Enforcement Action: None	10
Good Practice	Exceeds minimum legal requirements or industry standards. Good practice employed in most aspects. Most success criteria met. Suggested Enforcement Action: Verbal Advice (may be recorded on Report of Inspection ROI), no follow up required.	20
Generally Compliant	Meets minimum legal requirements or industry standards. Some success criteria not fully met. Best (Good?) industry practices not considered or planned. Suggested Enforcement Action: Consider Written Advice (ROI to specify target date for compliance) , may require follow up inspection.	30
Some Compliance	Almost meets minimum legal or industrial standard. More effort necessary. Several success criteria not fully met. Follow up required. Enforcement Action: Written Advice (Possible Contravention Notice, follow-up inspection may be required)	40
Falls Short of Requirement	Falls somewhat short of minimum legal requirements or industry standards. Majority of success criteria not met or not fully met. Suggested Enforcement Action: Consider Contravention Notice.	50
Unacceptable	Severe deficiencies in the system, well below legal requirements or industry standards. Risk of imminent serious danger to man or the environment. Poor operator attitude to required improvements. Suggested Enforcement Action: Consider Prohibition Notice.	60



HEALTH AND SAFETY
AUTHORITY

© Health and Safety Authority

Ranking of Sites

Population (on or offsite within PIZ) Modifier

	S_p
Large population (> 1000)	16
Medium population (> 50 to 1000)	8
Low population (< 50)	4

Population Modifier

Societal Risk Modifier

Safety Score

Intrinsic Environmental Hazard

Sensitivity Modifier

Pathway Modifier


Environmental Score

Sensitivity Modifier

	E_s
Highly Vulnerable receptor (e.g. SAC)	4
Sensitive receptor (e.g. SSS)	3
Sensitive receptor (not designated)	2
No sensitivity	1

Pathway Modifier

	E_p
Clear pathways both direct & indirect	2
No clear pathways identified	1



HEALTH AND SAFETY
AUTHORITY

Overall Site Risk Ranking

Site Name	Installation Type	Base Safety Score	Population Modifier	Societal Risk Modifier	Total Intrinsic Score	Hazard Band	Inspection Frequency (Years)
Med to large Pharma (API) Finishing Plant	Chemical Drum processing, med hazard Bulk Storage	5	8	1	40	B	1-2
Chemical Mfr	Chemical processing / processing toxic chemicals	10	8	1	80	A	2
Pharma API manufacturer	Chemical mfr with bulk storage of toxics	8	4	1	32	B	2-3
Spirit Distillers	Flammable Liquids storage	4	8	1	32	B	2-3

Band	Frequency (every, years)
A ₊	1
B ₊	1-2 years
C ₊	2-3 years
D ₊	3 years

HEALTH & SAFETY AUTHORITY

© Health and Safety Authority 2012

Outcome of Inspections

Enforcement under Chemicals Act 2008

Report of Inspection

Contravention Notice

Prohibition Notice

Prosecution of Offences

Standard	Description	Score
Best Practice	Operator proactive in identifying and implementing improvements. Use of best practice. All success criteria met.	30
Good Practice	Exceeds minimum legal requirements or industry standards. Good practice employed in most aspects. Most success criteria met.	20
Generally Compliant	Meets minimum legal requirements or industry standards. Some success criteria not fully met. Best (Good?) industry practices not considered or planned.	30
Some Compliance	Suggested Enforcement Action: Consider Written Advice (ROI to specify target date for compliance), may require follow up inspection. Almost meets minimum legal or industrial standard. More effort necessary. Several success criteria not fully met. Follow up required.	40
Falls Short of Requirement	Enforcement Action: Written Advice (Possible Contravention Notice). Follow-up inspection may be required.	50
Unacceptable	Falls somewhat short of minimum legal requirements or industry standards. Majority of success criteria not met or not fully met. Suggested Enforcement Action: Consider Contravention Notice.	60
	Severe deficiencies in the system, well below legal requirements or industry standards. Risk of imminent serious danger to man or the environment. Poor operator attitude to required improvements.	
	Suggested Enforcement Action: Consider Prohibition Notice.	

© Health and Safety Authority

