

# SEVESO II: A Guide for Engineers and Planners

## SEVESO III: What's Coming Next?

AWN Consulting Ltd.

8th November 2011

Dr. Fergal Callaghan & Maeve McKenna



# Overview

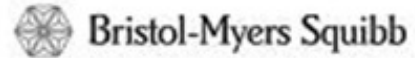
- Introduction to AWN Consulting and Seveso experience
- Background to Seveso II Directive
- Structure of Legislation in Ireland
- Local Authority Interaction with Seveso II
- Duties of Local Authorities, HSA, Establishment Operators
- Seveso II and Land Use Planning
- Seveso III – what's coming next?

## **AWN Consulting Ltd.**

- Multi-disciplinary environmental and safety consultancy
- Established 2000 (Irish Owned) – 20 Consultants
- Aim is to deliver solutions that are innovative, on time and within budget
- Our focus is on value added advice



## AWN Consulting Ltd – Clients.



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## **AWN Consulting Ltd.**

- **Dr Fergal Callaghan (Director)**
  - BSc in Industrial Biochemistry and a PhD in Chemical Engineering
  - 20 years industry and consultancy experience of safety and risk assessment
- **Ms Maeve McKenna (Senior Consultant)**
  - BEng (Chemical Engineering) MEng Chartered Engineer
  - 9 years engineering consultancy experience, 4 years directly in safety and risk assessment

## **AWN Consulting Ltd.**

- Significant experience of Seveso projects across the country
- Seveso Advisers for Local Authorities and An Bord Pleanála as well as private industry – unique perspective
- Issues we have identified:
  - Lack of clarity with local authorities regarding extent and scope of their role with respect to Land Use Planning

## **AWN Consulting Ltd.**

- Issues (continued):
  - LAs have an enforcement function with respect to tank farms
  - Fire officers - enforcement of fire fighting measures on tank farm sites and other seveso sites
  - Fire officers need to know and plan for the level of thermal radiation that fire fighters could be exposed to in a fire fighting scenario



## **AWN Consulting Ltd.**






- Issues (continued):
  - Sites with chlorine storage – high risk of a major accident with significant toxic exposure consequences
  - Water works/storage sites are non-Seveso but regulated by Process Industries Unit of HSA as if they are Seveso sites
  - GHS/CLP and Hazard Labelling

## **AWN Consulting Ltd.**

- Issues (continued):
  - Land Use Planning: Development plans need to take account of the need to maintain appropriate separation distances between Seveso sites and occupied areas
  - The HSA offers technical advice, there are examples of LAs and ABP issuing planning decisions contrary to HSA advice

# What is a Seveso Establishment?

- Seveso Regulations apply to establishments storing named substances and categories of dangerous substances above threshold quantities
- Categories of dangerous substances:

	Very toxic Toxic		Oxidising
	Explosive		Dangerous for the Environment
	Flammable Highly flammable Extremely flammable	(no symbol)	Reacts violently with water In contact with water, liberates toxic gas

## Exclusions

- Property of the defence forces
- Hazards created by ionising radiation
- Occurrence outside an establishment:
  - Transport of dangerous substances by road, rail, internal waterways, sea, air
  - Intermediate temporary storage associated with transport
  - Loading/unloading of dangerous substances at docks, wharves, marshalling yards
  - Transport to and from another means of transport at docks, wharves, marshalling yards

## Exclusions

- Occurrence outside an establishment:
  - Transport of dangerous substances in pipelines and pumping stations
- Exploitation of minerals in mines, quarries or by means of boreholes with the exception of related chemical and thermal processing operations and storage involving dangerous substances
- Offshore exploration and exploitation of minerals
- Waste land-fill sites with the exception of tailings disposal facilities containing dangerous substances




## Upper -tier Establishment

22 February 2011

Est_Name	Est_ADDRESS	TIER
Arch Chemicals B.V	Watery Lane, Swords, Co. Dublin.	1
Atlantic Fuel Supply Company Ltd.	Foynes Harbour, Durnush, Foynes, Co. Limerick	1
Atlantic Industries	Flavour Manufacturing Wexford, IDA Business & Technology Park, Rosslare Road, Drinagh, Co. Wexford.	1
Barclay Chemical Manufacturing Limited (t/a Barclay Crop Protection)	Damastown Way, Damastown Industrial Park, Mulhuddart, Dublin 15.	1
Calor Gas Teo	Whitegate, Co. Cork	1
Calor Gas Teo	Tivoli, Co. Cork	1
Calor Gas Teo	Tolka Quay, Alexander Rd. Dublin	1
Chemoo (Irl) Ltd. T/A Chemsources	Unit 2 Stadium Business Park, Ballycoolin Rd. Cappagh, Dublin 11	1
Cognis Ireland Ltd.	Little Island, Co.Cork	1
Conoco Phillips Whitegate Refinery Ltd. (formerly Irish Refining PLC)	Whitegate, Co.Cork	1
ConocoPhillips Bantry Terminals Ltd.	Reenrour, Bantry, Co. Cork	1
Contract & General Warehousing Ltd	Westpoint Business Park, Navan Rd. Mulhuddart	1
Dublin Waste to Energy Ltd	Pigeon House Road, Dublin 4	1
Dynea Ireland Ltd. (Dysochem Ireland Ltd.)	Marino Point, Cobh, Co.Cork	1
ELI LILLY S.A	Dunderrow, Kinsale, Co.Cork	1
Esso Ireland Ltd.	Joint Fuels Terminal, Alexandra Road, Dublin Port, Dublin 1	1
Flogas Irl. Ltd	Tivoli Ind. Est, Cork	1
Flogas Irl. Ltd	Marsh Rd. Drogheda, Co. Louth	1
Goulding Chemicals Ltd	Morgans South, Askeaton, Co. Limerick	1
Goulding Chemicals Ltd	Stokestown, New Ross, Co. Wexford	1
Grassland Fertilizers (Kilkenny) Ltd	Palmerstown, Kilkenny	1
Grassland Fertilizers Ltd.	Carrigrohane Road, Cork	1
Indaver Ireland Ltd	Tolka Quay Road, Dublin Port, Dublin 1.	1
Irish Distillers Ltd.	Midleton, Co. Cork	1
Irish Industrial Explosives Ltd	Clonagh, Enfield, Co Meath	1
Mallinckrodt Medical Imaging Ireland T/A Covidien Pharmaceuticals Dublin	Damastown Industrial Estate, Mulhuddart, Dublin 15	1
Merck Sharp & Dohme (Ireland) Ltd.	Ballydine, Clonmel, Co.Tipperary	1
National Oil Reserves Agency	Shellybanks Road, Ringsend, Dublin 4	1
Novartis Ringaskiddy Ltd.	Ringaskiddy, Co. Cork	1
Pfizer Ireland Pharmaceuticals	Drug Subs Plant Ringaskiddy, Co. Cork	1
Nitrofert Ltd.	Raheen, New Ross, Co. Wexford.	1
Schering-Plough (Avondale) Co.	Rathdrum, Co. Wicklow.	1
Shannon Aviation Fuels - Aer Rianta (previous Seveso operator Tedcastles Aviation Fuels Ltd.)	Fuel Farm Road, Shannon Airport, Shannon, Co. Clare.	1
Smithkline Beecham (Cork) Ltd	GlaxoSmithKline Beecham (Cork) Ltd.Currabinny, Co. Cork	1

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Est_Name	Est_ADDRESS	TIER
Tedcastles Oil Products	Yard 2, Tolka Quay Road, Parish of St. Thomas, Dublin Port, Dublin 1.	1
Topaz Galway (formerly Enwest)	Galway Harbour Enterprise Park, New Docks, Galway	1

<div>  <div> Lower-tier Establishment 22 February 2011 </div> </div>		
Est_Name	Est_ADDRESS	TIER
Astellas Ireland Co. Ltd	Damastown Road, Damastown Industrial Park, Mulhuddart, Dublin 15	2
Ballina Beverages	Killala Rd. Ballina, Co. Mayo	2
Barrow Storage Co. Ltd. T/A Campus Oil	Marsh Meadows, New Ross	2
BOC Gases Ireland Ltd.	Little Island Co. Cork	2
BOC Gases Ireland Ltd.	PO Box 201, Bluebell Ind. Est. Dublin 12	2
Brenntag Chemicals Distribution (Ireland) Ltd	Chlorine Store (C/O H. A. Crosbie), Tolka Quay Road, Dublin Port.	2
Swords Laboratories T/A Bristol Myers Squibb Cruiserath	Cruiserath Road, Mulhuddart, Dublin 15	2
Brooklands Gas Co. Ltd	Church Rd. Ballina, Co. Mayo	2
Calor Teo	Claremorris, Co. Mayo	2
Clarochem Ireland Limited (formerly Helsinn Chemicals)	Damastown, Mulhuddart, D15	2
Derrymore Agencies Ltd.	Quaterstown, Mallow, Co. Cork	2
Envia Ireland Ltd (Shannon Environmental Services)	Smithstown Ind Est. Shannon Co. Clare	2
ESB Aghada Power Station	Whitegate, Co. Cork	2
ESB North Wall Generating Station	Alexandra Rd, North Road, Dublin 1	2
ESB Poolbeg Power Station	Pigeon House Road, Ringsend, Dublin 4	2
Esso Ireland Ltd.	Joint Fuels Terminal New Ross, Marshmeadows, New Ross	2
Fareplay Energy Ltd	Tankfarm 1, Alexandra Road Dublin 1	2
Fareplay Energy Ltd	Tankfarm 2, Tolka Quay Road, Dublin 1	2
Flogas Irl. Ltd	Hazelhill, Ballyhaunis, Co. Mayo	2
Gensys Power Ltd.	Huntstown Power Station, Huntstown Quarry, Finglas, Dublin 11	2
Goulding Chemicals Ltd	Centre Park Road, Cork	2
Grassland Fertilizers Limited	The Pound Road, Slane, Co. Meath	2
Grassland Fertilizers Ltd.	Dock Road, Limerick City	2
Hovione Limited	Loughbeg, Ringaskiddy, Co. Cork	2
Iarnrod Eireann Dublin Port	Alexandra Rd, Dublin 1	2
Iarnrod Eireann Inchicore	Iarnrod Eireann Maintenance Works, Inchicore, Dublin 8	2
Intel Ireland Ltd.	Collinstown Industrial Park, Leixlip, Co. Kildare	2
Irish Bulk Liquid Storage Ltd	Foynes Harbour, Co. Limerick	2
Irish Distillers Ltd. Pernod Ricard	Fox & Geese, Robinhood Road, Clondalkin, D22	2
Irish Oxygen Co. Ltd	Waterfall Road, Cork	2
Isotron Ireland Ltd	Sragh Ind Est. Tullamore	2
Kayfoam Woolfson	Bluebell Industrial Estate, Naas Road, Dublin 12	2
Marsh Oil Products Ltd	Marsh Road, Drogheda, Co. Louth	2
Millipore Ireland Ltd.	Tullagreen, Carrigtwohill, Co. Cork	2
National Oil Reserves Agency	ESB Marina Tank Farm, Centre Park Road, Cork.	2

Est_Name	Est_ADDRESS	TIER
Pfizer Ireland Pharmaceuticals	Little Island, Co. Cork	2
Roche Ireland Ltd.	Clarecastle, Co. Clare	2
Schwarz Pharma Ltd. (Sifa)	Shannon Industrial Estate	2
Sigma Aldrich Ireland Ltd	Vale road, Arklow, Co. Wicklow	2
Swords Laboratories	Watery Lane, Swords, Co. Dublin.	2
Tedcastles Oil Products	Yard 1, Promenade Road, Parish of St. Thomas, Dublin Port, Dublin 1.	2
Tervas Ltd	Knockburden, Ovens, Co. Cork	2
Tibbett & Britten Group (Ireland) Ltd	Robinhood Road, Clondalkin, D22	2
Topaz Energy Ltd. (Irish Shell)	Centre park road, Cork	2
Topaz Energy Ltd. (Irish Shell)	Courthack Road, Limerick	2
Topaz Energy Ltd. (Irish Shell)	Terminal 1, Alexandra Road, Dublin 1.	2
Topaz Energy Ltd. (Irish Shell)	Yard 3, Alexandra Road, Dublin 1.	2
Topaz Energy Ltd. (T/A Fareplay) Galway	Lough Atalia Road, Galway	2
Tynagh Energy Ltd.	Derryfrench, Tynagh, Loughrea, Co. Galway	2
Utility Operations & Maintenance Services Ltd	Dublin Bay Power Plant, Pigeon House Road, Ringsend, Dublin 4	2
Vita Cortex Ltd.	Kinsale Road, Cork.	2

## What is a Major Accident?

- Major emission, fire, or explosion
- Leading to serious danger to human health and/or the environment,
  - immediate or delayed,
  - inside or outside the establishment,
- Involving one or more dangerous substances.



## Background

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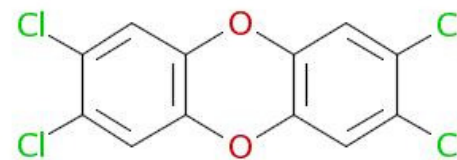
**Where is Seveso and what  
happened there?**

# Where is Seveso?



## What happened?

- July 1976 - dioxin released to residential populations leading to death and slaughter of animals, hospitalisation of the local population and a massive clean up
- The Seveso Directive passed in 1982
- Seveso II Directive 1996 and amended in 2003

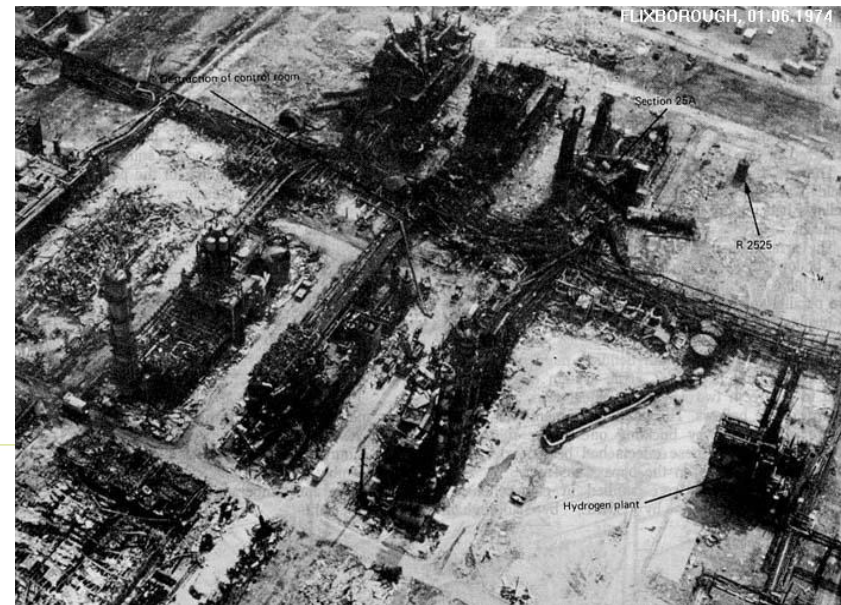




**A few more  
examples of Major  
Accidents....**

# Flixborough, Nypro UK, June 1974

- Explosion at a caprolactam process killed 28 people and seriously injured 36
- 40 tons of cyclohexane released forming a large vapour cloud;
- Flammable cloud ignited, VCE equivalent to 15t of TNT





## Bhopal, December 1983

- 40 tons of methyl isocyanate gas released killing approx. 2000 people immediately
- Approx. 20,000 people believed to have died subsequently
- Leakage of water into methyl isocyanate holding tank
- Exothermic reaction generated a major increase in temperature of the liquid causing a large volume of toxic gas to be released



# Toulouse, September 2001

- Large detonation at ammonium nitrate fertiliser plant
- 30 killed, up to 2000 hospitalised
- Significant damage to residential areas, schools
- Example of poor land use planning
- Guidelines subsequently revised



## Buncefield, December 2005

- At Hertfordshire Oil Storage Terminal, a motor spirit tank was overfilled resulting in fuel spill, vapour cloud formation, ignition and numerous vapour cloud explosions
- One third of site inventory (35 million litres of fuel) was consumed in fire
- Substantial damage to surrounding buildings
- No fatalities as buildings were mainly unoccupied (early on Sunday morning), a few serious injuries
- Example of bad land use planning











## In Summary....

- Major industrial accidents have driven the development of, and changes to legislation

## Seveso I 1982

- Focused on providing information to the authorities about the safety of a site
- Introduced a system of threshold values for dangerous substances
- Operator to prepare a safety case
- Operator obliged to take all necessary measures
- First step in centralising European Major Accident Hazard Policy

## Seveso II 1996

- Experience of Seveso I
- Followed lessons learned from other major accidents (Mexico City in 1984, Hickson in 1993)
- Onus on the operator to 'demonstrate' that all necessary measures are in place
- Regulator to approve the safety level of sites
- Regulator role in supervising companies

## Seveso II 1996

- National inspection systems
- Revised Safety Reporting
- Safety management systems and principles
- Land use planning policy
- Domino effects to be considered
- Public access to information
- Emergency plans to be revised and tested as necessary
- Substances that are dangerous for the environment

## Seveso II Amended 2003

- Triggered by major accidents (Toulouse, Baia Mare Romania, Enschede The Netherlands)
- Expanded the scope of Seveso II to processing activities in mining, pyrotechnic and explosive manufacturing sites, sites for the storage of ammonium nitrate and similar fertilisers



## Implementation in Ireland

- European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2006 (S.I. 74 of 2006)
- Also, Planning and Development Acts 2000 – 2002 and Regulations 2001 - 2006

## COMAH Regulations

- Preliminary and General (Regulations 1 – 7)
- Major Accident Hazards (Regulations 8 – 19)
  - Operators obliged to identify major accident hazards, implement 'all necessary measures', assess consequences and risk of hazards, and prepare a Major Accident Prevention Policy and Safety Management System

# Structure of COMAH Regulations

- Major Accident Hazards
  - Other operator duties including Notification to HSA, preparation of Safety Report and Internal Emergency Plan (Upper Tier sites), provide information for the safety of the public, comply with HSA notice for information
  - Local competent authority to prepare External Emergency Plan

# Structure of COMAH Regulations

- Major Accidents (Regulations 20 – 25)
  - Investigation, notification, reporting
- Enforcement and Regulation (Regulation 26 – 33)
  - Functions of central competent authority
  - Provision of Advice on Land Use Planning
  - Inspectors
  - High Court and service of documents

# Structure of COMAH Regulations

- Disclosure of Information, Translations of Reports  
(Regulations 34 – 35)
- Offences and Penalties  
(Regulations 36 – 45)
- Charges for services  
(Regulation 46)

# Local Authority Interaction with COMAH Regulations

- Regulation 5: Competent Authorities
  - HSA is the Central Competent Authority
  - Competent public authorities include An Garda Síochána, Local Authorities, the Health Service Executive, Harbour Authorities
- COMAH Regulations also make reference to planning authorities

## Local Authority Interaction with COMAH Regulations

- Regulation 11 requires operators to submit a 'reduced notification' document to the planning authority
- Regulation 15 requires operators to consult the local competent authority regarding the Internal Emergency Plan
- Regulations 16-17 require the local competent authority to prepare an External Emergency Plan

## Local Authority Interaction with COMAH Regulations

- Regulation 18 enables the operator of Seveso establishments to request information from the local competent authority with respect to domino effects
- Regulation 27 enables planning authorities to request technical advice from the Central Authority (HSA) with respect to Land Use Planning



## External Emergency Plan

- Emergency Plan for action outside the establishment in relation to possible major accidents at the establishment and which includes arrangements for co-ordinating off-site action and resources
- EEP is generally co-ordinated by the local authority Fire Service
- Coordinating competent authority consults with other local competent authorities (An Garda Síochána, HSE), also with the HSA, EPA, the public and establishment operator

## External Emergency Plan

- EEP may incorporate input from local authority environment section
- In order to plan for responding to fire scenarios, Fire officers need to know what level of thermal radiation fire fighters could be exposed to in a fire fighting scenario – information to be provided by operator
- Fire officer also has an enforcement role in relation to fire protection measures at tank farm sites

## External Emergency Plan

- EEP describes arrangements for:
  - Early warning of incidents
  - Co-ordinating resources
  - Providing assistance with on-site mitigatory action and off-site action
  - Providing the public with information
  - Sites with potential transboundary consequences

## External Emergency Plan

- 3 year intervals for review/revision/testing
- Provision of information for internal emergency plan

# Planning Legislation

## Planning and Development Acts (2000 - 2002)

**Part II**, Plans and Guidelines, Section 10 (Content of Development Plans):

- Objectives for the control, of
- (i) siting of new establishments,
  - (ii) modification of existing establishments,
  - (iii) development in the vicinity of such establishments,
- for the purposes of reducing the risk, or limiting the consequences, of a major accident.

# Planning Legislation

## Planning and Development Acts (2000 - 2002)

**Part III**, Control of Development, Section 34:  
Permission for development

- Prescribes the timescale for a planning authority to make a decision following the receipt of technical advice from the prescribed authority (i.e. the HSA)

# Planning Legislation

## Planning and Development Acts (2000 - 2002)

**Fourth Schedule**, Reasons for the refusal of permission which exclude compensation

- Item 5. The proposed development —
  - (a) could, due to the risk of a major accident or if a major accident were to occur, lead to serious danger to human health or the environment, or
  - (b) is in an area where it is necessary to limit the risk of there being any serious danger to human health or the environment.

# Planning Legislation

## Planning and Development Acts (2000 - 2002)

**Fifth Schedule**, Conditions which may be imposed without compensation

- Item 9. Any condition relating to reducing the risk or limiting the consequences of a major accident, or limiting the risk of there being any serious danger to human health



# Planning Legislation

## Planning & Development Regulations (2001 – 06)

Section 11 Addresses Major Accidents Directive and requires local authorities to:

- Notify the NAOSH (HSA) of planning applications relating to the provision of or modification to an establishment with MAH consequences, developments within the consultation distance surrounding establishments, developments in the vicinity of establishments and relevant to MAH risk or consequence (within prescribed timescale);
- Note, the consultation distance is set out in Schedule 8;

## Planning Legislation

### Section 11 Local Authority requirements (continued):

- Request technical advice on the effects of the proposed development on the risk or consequences of a major accident;
- Submit a copy of the technical advice to the Board in the case of an appeal;
- Similar notification requirements apply where the development is by or on behalf of the local authority;

## Planning Legislation

### Section 11 Local Authority requirements (continued):

- Notify the NAOSH of Section 5 declarations that relate to the provision of or modification to an establish with significant MAH repercussions and request technical advice
- Submit a copy of the technical advice to the Board in the case of an appeal

## Planning Legislation

Part 2 of the 2001 Planning and Development Regulations deals with exempted development.

Article 9 deals with Restrictions on Exemption and Section 9 (1) (d) states:

## Planning Legislation

### 9. Restrictions on exemption.

(1) Development to which article 6 relates shall not be exempted development for the purposes of the Act—

(d) if it consists of the provision of, or modifications to, an establishment, and could have significant repercussions on major accident hazards.

(Article 6 details types of development that are exempt from requiring planning permission.)

## Duties of HSA

- COMAH Regulations prescribe the Health and Safety Authority as the Central Competent Authority
- Functions of the HSA are set out in Regulation 26
  - Supply information to the European Commission as required
  - Identify establishments or groups of establishments with possible domino effects

## Duties of HSA

- Functions of the HSA (continued)
  - Review and approve Safety Report for Upper Tier sites
  - Notify local competent authorities of their duty to prepare an external emergency plan
  - Consult with the EPA on information in the Safety Report that is relevant to environmental hazards

## Duties of HSA

- Functions of the HSA (continued)
  - Provide technical land use planning advice to a Planning Authority or An Bord Pleanála
  - Inspection of Seveso establishments



## Duties of Operators



In respect of every establishment it shall be the duty of the operator concerned to take all necessary measures:

- (a) to prevent major accidents occurring, and
- (b) to limit the consequences of any such major accidents for people and the environment.

# Seveso Establishment Operators must comply with....

Article Seveso II Directive	Regulation (S.I. 74 of 2006)	Description	Lower Tier	Upper Tier
-	8	Demonstration of safe operation (including HAZID & QRA)	✓	✓
5	9	General obligations	✓	✓
6	11	Notification	✓	✓
7	10	Major Accident Prevention Policy	✓	✓
9	12	Safety Report	✗	✓
11 (a)	15	Internal Emergency Plan	✗	✓
11 (b)	16	(Participate in preparation of) External Emergency Plan and External Communication	✗	✓
	18	Information for the public	✓	✓

## Land Use Planning

- Consultation distance – defined in Schedule 8 of Planning Regulations
- Specified area – the area liable to be affected by a major accident hazard at an establishment
- HSA provides technical risk-based LUP advice:
  - Individual risk (PADHI methodology)
  - Societal risk
- Three risk zones surrounding an establishment: inner zone, middle zone and outer zone/specified area

## Consultation Distance

Activity	Consultation Distance
LPG above ground storage	600 m
LPG mounded/underground storage $\leq$ 100 tonnes	100 m
> 100 tonnes	200 m
Ammonia bulk storage	2000 m
Ammonia cylinder or drum storage	700 m
Chemical warehouse	700 m
Bulk flammable storage	300 m
Chemical processing, flammable/toxic	1000 m
Chemical processing, dust explosion risk	300 m
Explosives manufacturing	1000 m

Distance is measured from the establishment perimeter

## Chlorine Storage

- Some local authority chlorine storage depots could be lower tier Seveso sites (> 10 tonnes)
- Regardless, a 1 tonne Cl drum has major accident hazard potential
- The HSA are regulating water treatment works and storage depots as Seveso sites
- Also there are potential planning implications for chlorine storage

## Anaerobic Digestion Plants

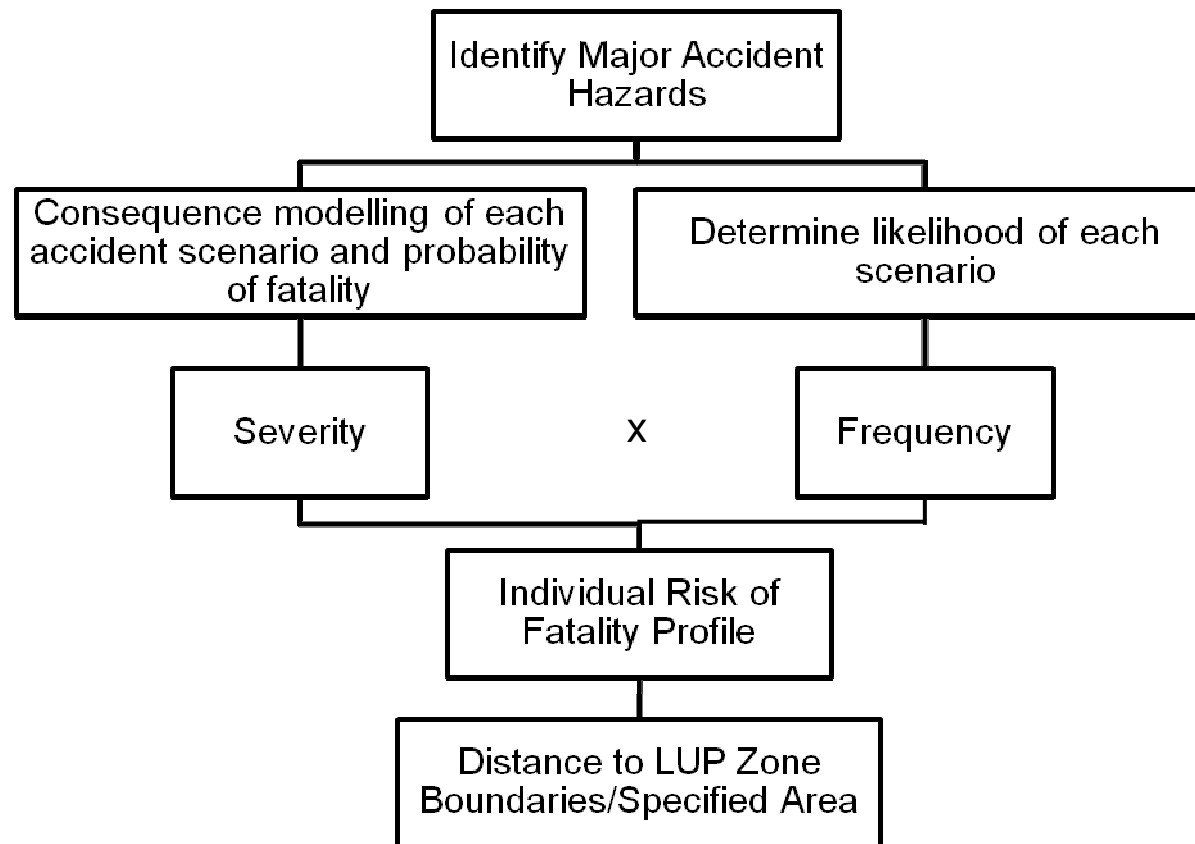
- Significant quantities of methane are generated and stored on site at anaerobic digestion plants
- Outdoor hazards are mainly associated with flash fire scenarios
- Can impact on developments on adjacent lands
- The flash fire envelope should be identified and level of thermal radiation

# Risk-based Land Use Planning Zones

- Individual Risk Zones

$10^{-5}/\text{year}$	Risk of fatality of Inner Zone (Zone 1) boundary
$10^{-6}/\text{year}$	Risk of fatality of Middle Zone (Zone 2) boundary
$10^{-7}/\text{year}$	Risk of fatality of Outer Zone (Zone 3) boundary
$10^{-7}/\text{year}$	Equivalent to Specified Area

# Individual Risk Zones: HSA Methodology





# PADHI Methodology

	Inner Zone (Zone 1)	Middle Zone (Zone 2)	Outer Zone (Zone 3)
Level 1	✓	✓	✓
Level 2	✗	✓	✓
Level 3	✗	✗	✓
Level 4	✗	✗	✗

## PADHI Methodology

- Level 1: People at work, parking
- Level 2: Developments for use by the general public
- Level 3: Developments for use by vulnerable people
- Level 4: Very large and sensitive developments

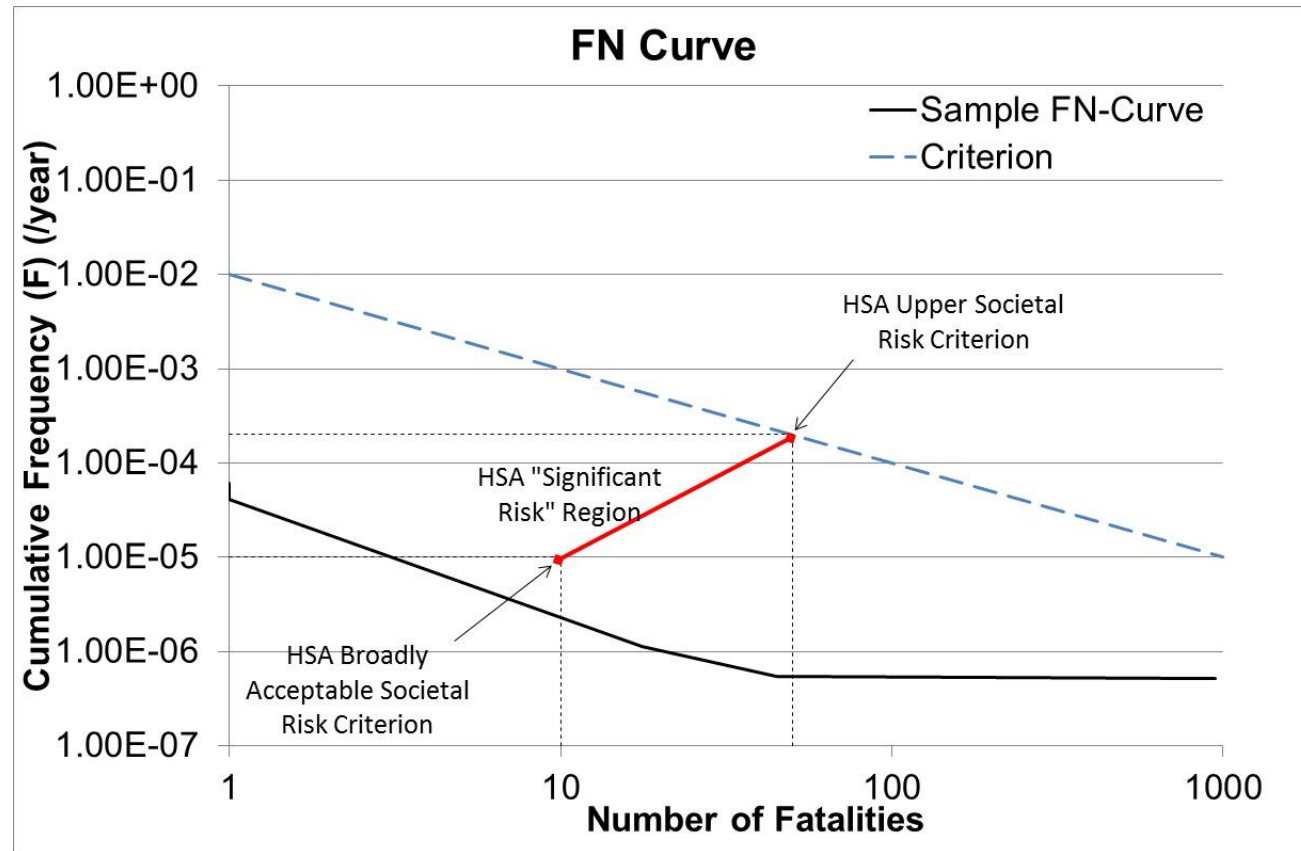
## Societal Risk

- Societal Risk is considered by the HSA in offering technical advice, but not in all cases
- Addresses the number of people potentially affected by a major accident hazard
- Assessment methodologies:
  - Societal Risk Index (SRI)
  - Risk Integral (RI)
  - Approximate Risk Integral (ARI)
  - FN Curves

## Societal Risk

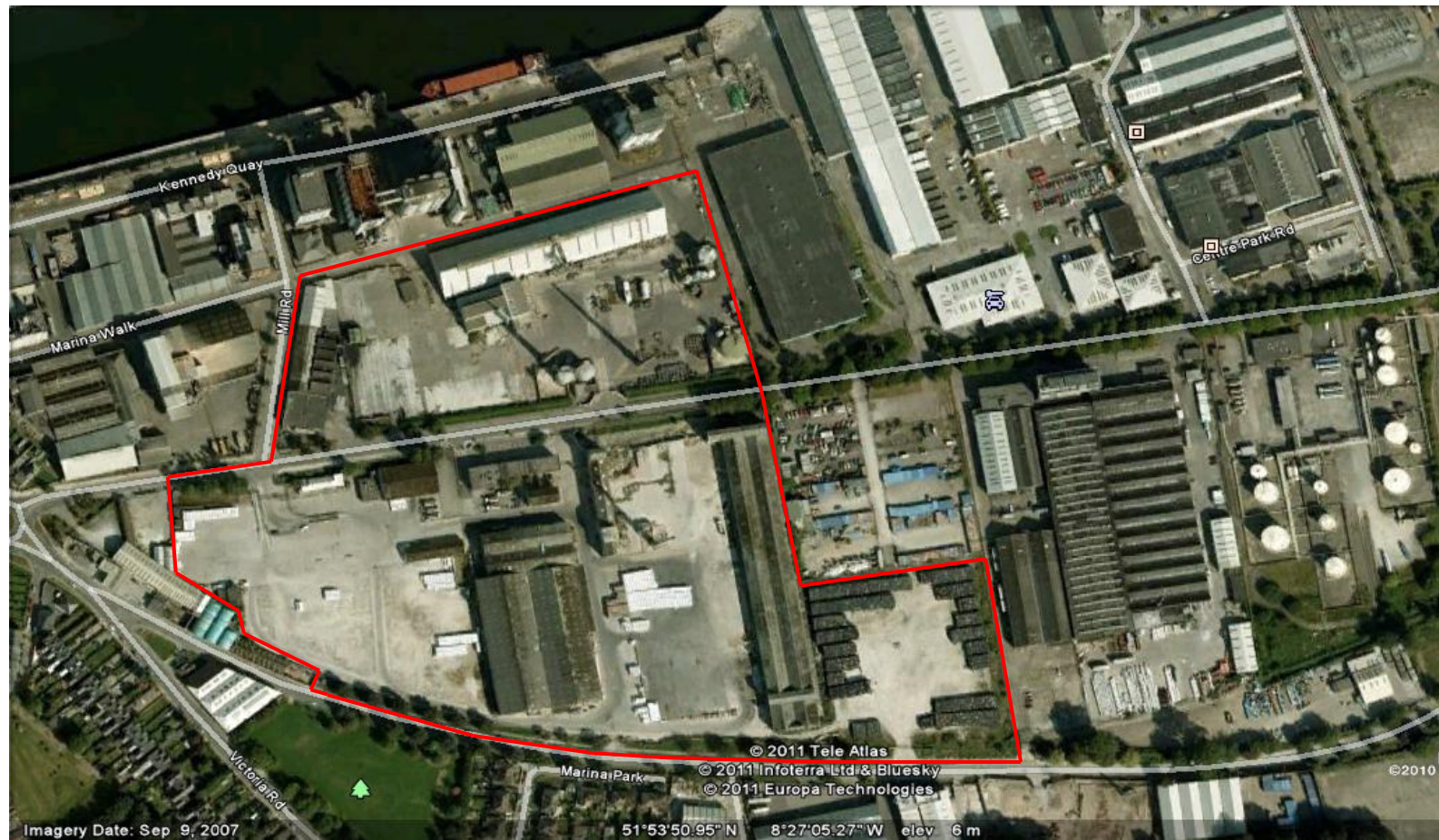
- HSA Criteria:
  - Upper societal risk criterion value of 1 in 5000 for 50 fatalities (advise against)
  - Broadly acceptable region of 1 in 100,000 for 10 fatalities (advice is not against)
  - Significant risk region between these two values

# Sample FN Curve



# Case Study

## Gouldings Chemicals, Centre Park Road, Cork



# Assessment Methodology

Policy & Approach of the Health & Safety Authority to COMAH  
Risk-based Land-use Planning  
(19 March 2010)



## Policy & Approach of the Health & Safety Authority to COMAH Risk-based Land-use Planning (19 March 2010)

Including Detailed Implementation by Sector

## Case Study: Gouldings Chemicals, Cork

- Major Accident Scenarios:
  - 30t ANF truck explosion outside warehouse
  - 300t ANF stack explosion outside warehouse
  - 30t ANF stack explosion outside warehouse
  - 30t ANF truck explosion inside warehouse
  - 300t ANF truck explosion inside warehouse
  - 30t truck fire outside warehouse and toxic gas dispersion
  - 30t truck fire inside warehouse and toxic gas dispersion
  - 30t stack fire outside warehouse and toxic gas dispersion
  - 300t stack fire outside warehouse and toxic gas dispersion

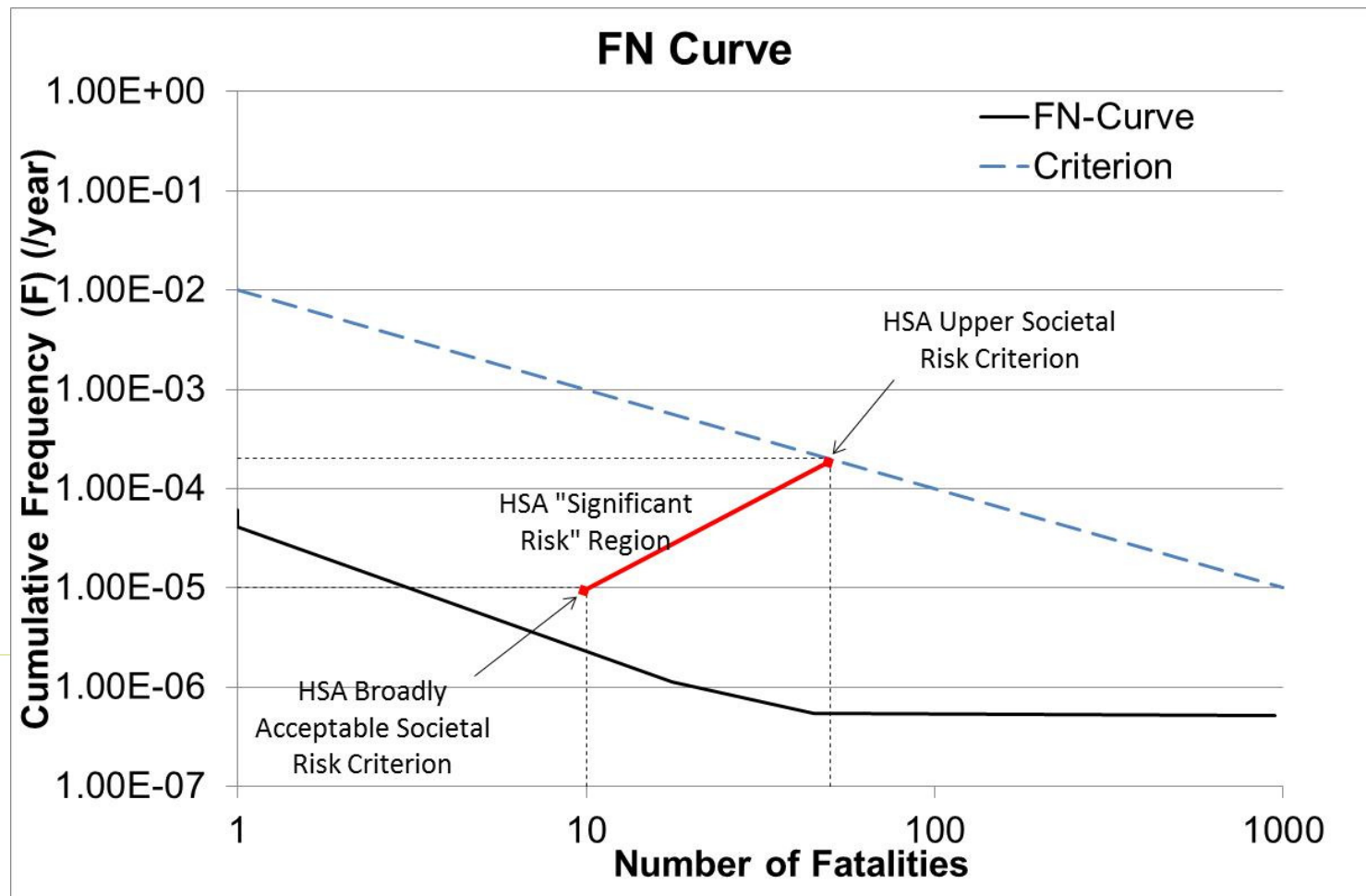


## Gouldings LUP Zones



# Gouldings Societal Risk FN Curve

- Calculated by AWN Consulting for Marina Commercial Park Development Planning Application



## Seveso III...

- Regulation (EC) No. 1272/2008 on classification, labelling and packaging of dangerous substances and mixtures (CLP) implements the UN Globally Harmonized Scheme (GHS) for chemicals;
- Seveso III updates categories of dangerous substances in line with GHS;
- Expands the scope, e.g. previous 'harmful' classification becomes 'toxic' for some substances which will fall under Seveso;.

## Seveso III Potential Issues

- Some existing non Seveso sites to become Seveso sites
- (note this is already happening as the GHS/CLP and REACH programmes progress – in particular with materials being reclassified as R50/53)
- Provides for increased access to information and public consultation on Seveso sites
- Could be a similar system to the current EPA system

## Seveso III Potential Issues

- Maintain and clarify existing provisions – emphasising environmental protection and possible integration with other similar legislation
- Closer co-ordination between different authorities
- Introduce stricter standards for inspections of installations

## Conclusions

- AWN perspective on issues we have encountered with respect to Seveso and Local Authorities
- Other potential issues for Local Authorities: EU Classification, Labelling and Packaging Regulation – Globally Harmonised System
- Feedback

# QUESTIONS

