# SUMMATION

**ON BEHALF OF**

## CHASE
## (PASSAGE WEST/GLENBROOK/MONKSTOWN)

**MARCIA D'ALTON**
**29TH FEBRUARY, 2005.**

What is the Environmental Protection Agency?

The Environmental Protection Agency comprises five people – a Director General and four other directors. This is as decreed by Section 19 of the Environmental Protection Agency Act, under which the Agency was established in 1992.

Under Section 52 of the Environmental Protection Agency Act, one of the principal functions of these five people is the *licensing, regulation and control of activities for the purposes of environmental protection*. That means that they must try to balance the need to protect the environment with the need for economic and social progress and development. To help them carry out this amongst other function, they may take on employees. So all those in the Johnstown Castle headquarters and the Inniscarra regional office with whom we have contact are not the Agency: they are employees of the Agency. In other words, they are employees of those five people – the Director General and the four other directors.

The Agency may not grant a licence to any activity unless it is satisfied that emissions from that activity will not cause *significant environmental pollution.* And with particular relevance to this Oral Hearing, environmental pollution means *the disposal of waste in a manner which would endanger human health or harm the environment*. So all information gleaned at any oral hearing is distilled and evaluated by the Chair of that oral hearing such that a balanced and informed judgement may be delivered to the Director General and four directors.

Arising from this oral hearing, you, Mr. Chairman, will deliver your opinion as to whether the proposal by Indaver Ireland to establish a hazardous and non-hazardous waste co-incineration plant, a municipal incinerator and a hazardous waste transfer station at Ringaskiddy is appropriate within the context of, firstly, sustainable development as enshrined in global and national policy and, secondly, the protection of human health and the environment as required under the Environmental Protection Agency Act.

Those giving evidence at this hearing can be considered within three categories. The first is the proponent of the activity – Indaver Ireland. Indaver Ireland began its career in 1977 as Minchem Environmental Services. Minchem Environmental Services is an Irish company and one of the principal players in the Irish hazardous waste transport and export market. In November 1999, Indaver NV purchased a 60% shareholding in Minchem. Indaver NV is a Flemish company specialising in the management of hazardous and non-hazardous waste in which the Flemish government has a 54.2% shareholding. The Indaver Group employs over 800 people and has presence in 10 countries in Europe, primarily Belgium, Central and Eastern Europe and Ireland. In May 2000, Indaver Ireland was set up to identify commercial opportunities within the Irish waste management sector. Also in 2000, Indaver began the process of selecting a suitable site in Cork Harbour for the establishment of what was presented as being a national facility for incineration of hazardous waste. In 2002, the company applied for permission to extend its transfer station at Tolka Quay in Dublin to include a blending plant for solvent wastes. Then in March 2003, Indaver NV purchased the remaining 40% shareholding in Minchem. The Indaver proposal currently under scrutiny is therefore one founded on purely commercial grounds.

The Indaver proposal is entirely unsatisfactory to the second group giving evidence to this oral hearing. The opponents to the Indaver proposal are the general public, represented here by housewives and their husbands, doctors, solicitors, farmers and chemists. Until four years ago, few ever heard of Directive 2000/76/EC. Few understand the mechanisms of a fluidised bed or a moving grate furnace. Few understand the chemical complexities behind mixing various categories of hazardous solvents. But they do understand the reality of heavy trucks carrying dangerous goods going past their front doors. They do understand the fear of living in the shadow of smokestacks of undefined composition. They do understand the value of

health, community and pride of place. They do understand the potential for commercial gain to drive out all concepts of sustainability. And they do understand Cork Harbour.

Because of the nature of the Indaver proposal, its establishment and operation must conform to global, European and national legislation and recommendations established for the purposes of protecting human health and the environment. Those comprising the third group giving evidence to this oral hearing are the technicians – the engineers and scientists whose job it is to see beyond the emotion, beyond the financial rewards and beyond their own personal opinion as to the suitability or otherwise of incineration as a component of the Irish waste management system. Their job is purely to evaluate the potential compliance of the Indaver proposal with the relevant legislation and recommendations. There should be broad agreement between these technicians. Such evaluation is merely a matter of educated judgement, mathematics and following practice laid down over as much as 20 years of hard research. But there isn't. They too are divided into two camps. Those who are paid by Indaver all say that the proposed facility will operate without causing harm to human health or the environment. Those who are here in a voluntary capacity have extreme reservations as to the veracity of this claim.

I, Mr. Chairman, am in the latter camp. For a company to strive for commercial gain and market domination is entirely acceptable and normal. But a proposal such as the Indaver proposal for Ringaskiddy goes beyond the concept of normal even for countries where incineration is an established technology. The impacts of a waste management facility such as that proposed by Indaver for Ringaskiddy are so great that international and European recommendations and legislation have been laid down to guide every aspect of the project from concept through to construction and operation. Because it is so fundamental to protection of human health and the environment, these recommendations and legislation place special emphasis on preservation of air quality. In particular in relation to site selection for such facilities, I refer to the World Health Organisation guidelines published in 1993 on *Site Selection for New Hazardous Waste Management Facilities* and to those contained in the European Commission's *Environment Integration Manual*, published in 2004. Neither of these was followed in the course of the Indaver site selection procedure for its proposed waste management facility at Ringaskiddy. This I find neither normal nor acceptable. In particular in relation to preservation of air quality, I refer to air emission limit values specified in Directive 2000/76/EC on the incineration of waste and to the World Health Organisation's *Air Quality Guidelines for Europe*, published in 2004. Potential compliance or otherwise with these limits is estimated by following air modelling procedures derived by the United States Environmental Protection Agency (USEPA) over the past thirty years. These procedures are so well researched and comprehensive that they have been adopted by statutory environmental bodies worldwide, including our own Environmental Protection Agency. It is my professional judgement that these air modelling procedures were neither responsibly applied nor properly executed in evaluating the potential impact of emissions to air from the proposed Indaver facility. And this I find neither normal nor acceptable.

As I outlined in my evidence of 18th February to this oral hearing, the Indaver site selection procedure was primarily a desk-based study which relied on the County Development Plan and the telephone. Applied site selection criteria included environmental considerations only after its four preferred sites in Ringaskiddy had been shortlisted. Two of the four sites were in private ownership, while the other two belonged to Irish Ispat. One of these sites was further away from sensitive receptors than any of the other four, while the other was closer to sensitive receptors than any of the other four. However, that site which was furthest from sensitive receptors was believed to be potentially contaminated and to possibly involve considerable construction costs in piling. So in December 2000, Indaver purchased that site from Irish Ispat closest to sensitive receptors. One month later, Indaver commissioned a reputable firm of Cork-based consultants to prepare an Environmental Impact Statement for the chosen site. Part of this Environmental Impact Statement was to include an evaluation of

potential emissions to air from the proposed Indaver facility. Were the results of that evaluation favourable, Indaver's choice of site would be justified, regardless of the inappropriateness of its site selection procedures.

The results of this evaluation were favourable. But what did this evaluation comprise? On the face of it, it comprised all that it should – a background study of existing ambient air quality, application of a USEPA approved air model and assessment of results both using USEPA recommended procedures and against the relevant legislation for ambient air quality. In the course of this evaluation, a suitable stack height for the proposed facility was derived.

The background study of ambient air quality lasted three months. Although this was considerably shorter than the 12 months recommended by USEPA procedures, significant exceedences of particulate, nickel and arsenic over recommended ambient air quality were identified. The nickel and arsenic exceedences were identified despite the use of techniques for which the level of detection was three times the recommended limit. In the Environmental Impact Statement, the particulate exceedences were assumed to be due to fine weather and high local temperatures. During the course of this hearing, exceedences of particulate, nickel and arsenic were all attributed to the neighbouring Irish Ispat plant. However, wind direction on the days of particulate exceedences do not uphold this claim. Irish Ispat closed in June 2001. Indaver's background study of ambient air quality also finished in June 2001. The stated assumption was that the source of the poor air quality had now gone. A simple extension of the study in June 2001 would have validated this claim. A repeat of the study during the four intervening years would have validated this claim. But the claim has never been validated.

In air dispersion modelling terms, Cork Harbour is a peculiar place. It displays all those characteristics which complicate local winds and air flows. It is a valley surrounded on three sides by steep hills. Winds channel through the valley floor and roll down the hills. During warm summers, the land-water interface causes rotating sea breezes during the day and land breezes during the night. Temperature differentials between land and water cause local radiation inversions on clear winter nights and frontal inversions under the cliffs of Fort Carlisle on warm still summer days. The variation in land use around the Harbour further influences vertical wind gradients. Intimate knowledge of these phenomena can be gleaned only by familiarity. It cannot be acquired over a period such as the six half day visits paid by the Indaver consultants to the Indaver site. And so the model that was applied to evaluate the impact of predicted emissions from the proposed Indaver facility was one which, while fully approved by the USEPA, was entirely incapable of emulating the horizontal and vertical complexities of local air movements in inner Cork Harbour. The inappropriateness of this model for the application is confirmed by the USEPA.

It was also using this model that a stack height of 55 metres was derived. Normally, USEPA guidance on determining stack height is applied in conjunction with USEPA regulatory air dispersion modelling. The worth of this guidance has been upheld over 20 years of application and validated by both mathematical and real-life modelling. Had this guidance been applied in the case of the Indaver proposal, the recommended stack height would have been at least 90 metres. But it wasn't applied, nor was any attempt made to correlate the results of this guidance with the stack height results determined for the Indaver facility by air dispersion modelling alone.

Evidence was delivered by Indaver experts during the course of this hearing to the effect that dispersion of emissions from the Indaver facility would be determined not by the actual height of the stack, but by the effective stack height created by the velocity and elevated temperature of the discharged plume. This was estimated to be 125 mOD in stable conditions and as much as 190 mOD during the calmest of conditions. Consequently, it was claimed,

plume dispersion would neither impact on local topography nor be affected by local meteorological variances.

It is true that velocity and elevated temperature both cause a discharged plume to rise above the actual stack height. Yet, although it is fundamental to dispersion theory, nowhere in the Environmental Impact Statement is effective stack height even mentioned.

But it is also true that effective stack height is affected by atmospheric stability, wind speeds at the top of the stack, ambient temperature, cloud cover and mixing height. And all the parameters for such meteorological variances were derived for the Indaver air dispersion model from Cork Airport. Cork Airport is at 104 mOD, on an elevated site in simple terrain, surrounded by primarily agricultural land and nowhere near any kind of a water body. On the other hand, the Indaver site is virtually at sea level, at the bottom of a valley in complex terrain, surrounded by a mix of industrial, residential and agricultural land uses and directly adjacent to a major water body. Again, we have been told that at effective stack height, conditions pertaining to Cork Airport also pertain in Cork Harbour. But for a plume to reach effective stack height, it must first overcome conditions at stack height.

In preparation for this oral hearing, the Indaver model was re-run using historical data from the meteorological station at Roches Point. To further validate the results of the study, the data was also input into a more modern model which takes account of variances in vertical wind speed. And lo and behold, the results are even more favourable that those presented in the Environmental Impact Statement.

But nobody considered whether Roches Point, being at the top of a vertical cliff face, adjacent to the open sea and being surrounded by undeveloped agricultural land, was representative of conditions in the Inner Harbour. Nobody considered USEPA advice that one year of on-site meteorological data is essential to getting AERMOD, this more modern model, to accurately simulate conditions in a location such as Cork Harbour. Nobody considered comparing the accuracy of the wind speed measuring equipment used at Roches Point 30 years earlier with that used today at Cork Airport. In the light of the new evidence brought by Indaver to this hearing, Met Eireann confirmed last Friday to me that the two are not comparable. In this regard, I urge you, Mr. Chairman, to contact Dr. Aidan Murphy in the Climate Enquiries division of the Met Eireann headquarters in Dublin, telephone 01-8064260.

But if the ethics of conscientious professional application has got lost in all this mathematical simulation, what has happened to good common sense? The results of the Indaver study using one model indicate worst-case concentrations to be at the southern site boundary and dispersing in a direction opposite to that of the prevailing wind. The results of the Indaver study using the other model indicate worst case concentrations to be at the northern site boundary and dispersing in a north-westerly direction over Haulbowline Island. Under no circumstances do the results show any significant impact on the steep hills merely $1 - 1^1/_2$ km away. Yet the very best of scientific advice is that for low-level emissions, peak concentrations should occur very near the stack while, for taller stacks, peaks should occur further downwind and peaks should also be experienced on terrain features as plumes impinge on them. But this is a 55 m stack with a plume which is driven by buoyancy and momentum and displays no such tendencies. This 55 m stack was deemed by the Indaver modelling to be of adequate height, even with terrain twice this height merely $1 - 1^1/_2$ km away. Yet in Good Engineering Practice for Stack Height (1985), the USEPA demonstrates two examples of buoyant plumes in similar topography where wind tunnel studies predicted that a stack height of 1.5 times and twice the height of surrounding topography were necessary if, in real life, impaction with the surrounding hills was to be avoided. In their paper *Effect of a Nearby Hill on Good Engineering Practice Stack Height*, published in 1993, Petersen et al. give a further example of extensive real-life simulations predicting that three stacks, each with buoyant

plumes, would have to be 2.6 times the height of nearby elevated terrain if it emissions from the stacks were not to negatively impact on surrounding hills.

In association with your assessment of this air dispersion modelling study, Mr. Chairman, part of your duties under the Environmental Protection Agency Act will include at least a basic assessment of the impact of predicted air emissions on human health. This is also as recommended by the USEPA, which provides guidance in its 1998 publication. You will note in the course of this assessment that much of the background information which you will need has not been provided by Indaver. In this regard, I refer to such information as the source and accuracy of receptor and terrain data, methodologies used to determine land use co-efficients, original copies of stack test data, the derivation of meteorological data inputs, description of procedures used to compensate for missing meteorological data and supporting documentation for reach entry in model source pathways.

But why would one be surprised that the data facilitating any sort of risk assessment would not be provided by Indaver? This is a company which is prepared to spend €100 million on the construction of a facility but is not prepared to spend €10 – 15,000 on a proper evaluation of background air quality. This is a company which is willing to finance hundreds of thousands of euro in employing barristers and consultants to uphold its unorthodox site selection procedures but is not willing to spend €50,000 on erecting an on-site meteorological tower. If Indaver wishes to demonstrate the commitment it professes to this project and to the health of people and the environment, then let it obtain the measurable data which would allow proper scientific evaluation of the site in which it claims such confidence.

And why did Indaver pick this site in the first place? What drew them to Cork Harbour? Was it the oft-quoted statistic that 60% of Ireland's hazardous waste is generated in County Cork? Was it to uphold the proximity principle?

I don't think so.

According to the National Hazardous Waste Management Plan, there are 111,000 t of non-halogenated solvents generated in Ireland. Of these, almost 70,000 t are treated on site. For the most part, this on-site treatment is performed by the larger multinationals such as those at Ringaskiddy. Of the remaining 40,000 t, 20,000 t will be taken to the Indaver proposed solvent blending facility at Tolka Quay in Dublin. Here, it will be mixed to optimise its calorific value. To date, there has been no market for the resulting fuel in Ireland. However, it will be an excellent fuel for the post combustion chamber of Phase 1 of the proposed Ringaskiddy facility. So, even if Indaver were to capture the entire non-halogenated solvent market in Ireland and if all non-halogenated solvents generated in the country came from Co. Cork, only 17% of all national solvents would be transported directly from their point of generation within County Cork to the proposed Ringaskiddy facility.

So if it wasn't the proximity principle, was it to site what was proposed as the national hazardous waste incinerator close to the hub of Ireland's major pharmaceutical players?

I don't think so.

This is not what is upheld as being the national waste incinerator. This is a fluidised bed incinerator, so chosen to facilitate the disposal of sludge generated by industries in County Cork. The National Hazardous Management Plan estimates some 7,000 t of hazardous sludge to have been generated nationally in 1998. But Indaver has applied and has been granted permission to treat only 2,000 t of hazardous sludge. According to the Sludge Management Plan for County Cork, a further 48,000 t of non-hazardous sludge are generated in the county. Industries in the South Cork area have a particular difficulty with management of sludge at present. A thermal treatment facility to treat hazardous wastes currently exported for disposal

may be a recommendation of the National Hazardous Waste Management Plan but, contrary to the claims of the non-technical summary of the Indaver EIS, incineration is not a recommended treatment strategy of the Sludge Management Plan for County Cork.

And is Indaver attempting to uphold the principle of self-sufficiency in the face of closing European markets?

I don't think so either.

The Waste Management Council of the Netherlands has evaluated the availability of hazardous waste incineration capacity throughout Europe in its 2004 study, *The future of incineration of specific hazardous waste*. It confirms that the volume of hazardous waste being processed in the rotary kilns of the Netherlands has declined since 1998 and is expected to decline further in the coming years. Supplies of waste to rotary kilns in Germany and Flanders have also declined and there is overcapacity in these regions. In France, it notes, there has been a slight increase in hazardous waste supply and additional capacity for the incineration of hazardous waste has been built in recent years. However, overcapacity still exists. In fact, the only exception to this general trend is the UK, where the capacity for both recycling and incineration is limited. No new incineration capacity has been built in the UK in the last few years and, on the contrary, one plant for the incineration of hazardous chemical waste has closed. However, plenty of capacity remains in the British cement kiln industry.

So if it is not the proximity principle, and if it is not the principle of self-sufficiency, then what is it that draws Indaver to Ringaskiddy? Far more likely to be an increased market share in hazardous waste management gained by establishing a major transfer station in County Cork. Far more likely to be a quick fix and highly lucrative solution to the problems of non-hazardous sludge management in the Cork area. And far more likely to be the availability of a cheap fuel with which to dry sludge which, according to the terms of its draft licence, may be accepted at 2%DS, that is 98% water.

Now if that is commercial reality, that's fine. And if that commercial reality works, that's fine too. But it must be adjudicated in the context of the carrying capacity of the environment. I speak on behalf of CHASE (Monkstown/Glenbrook/Passage West) and on behalf of the constituents of the Passage West Town Council when I say that we believe that the impact of this proposed facility on the carrying capacity of neither the environment nor the people of that environment has been properly evaluated. I speak on behalf of common sense and the application of sound engineering principles when I say that the data to investigate that carrying capacity has, five years after site selection first started, not yet been gathered.

And if the Director General and the four directors that comprise the Environmental Protection Agency favour incineration as a significant component of integrated waste management in Ireland, that is fine too. But don't let inadequate evaluation of the impact of this proposal be masked by false references to the proximity principle, the principle of self-sufficiency and conformation with local and national waste management plans.

The Code of Conduct for the Environmental Protection Agency states that the Agency is committed to honesty, integrity and transparency in all its dealings. It states that the Agency makes decisions based on objective and independent evaluations. It speaks of competence and professionalism and of being independent of both political and public pressure.

We thank you, Mr. Chairman, for enabling us to voice our opinions over the course of this oral hearing. We rely on you to use <u>your</u> sound judgement in distilling all the opinions you have heard and evaluating them within the context of common sense and sound science.

And we rely on the stated objectivity, independence and professionalism of the Environmental Protection Agency to request the real, measurable data which will enable proper assessment of the proposed Indaver facility for Ringaskiddy – assessment that will enable the Environmental Protection Agency to truly uphold the responsibilities to the environment and public health assigned to it under the Environmental Protection Agency Act.