Summary

Aim of the research
The aim of the research was to develop a method of measurement, whereby a clear view could be obtained about the way people experienced and felt about the impact of the local industry, their own community and the way they responded to the environmental impact of the industry. Letters of appeal and objection notices were the foundation for this research. The research limited itself to the period 1870-2000, taking into account the change in society and the development of local industry.

Study Area
The difference between the expected and the actual way the inhabitants experienced their own environment together with the influence of the government formed the objects for this research. Because it was not possible to make a countrywide research, a Frisian harbour-town Harlingen, was chosen. At a local level research was started to investigate whether there were any signs visible concerning the relationship between the local community and their local industrial environment. Earlier studies have shown that people living in towns with industrial sites nearby experienced much more inconvenience than people from the country-side. Because there were no direct research details available regarding our chosen period of time, we had to look for some alternative sources. Using the same method as Verbruggen in 2000, who had made a similar research in Gent (B), it was decided to gather information about the permits and licenses granted to the different industrial companies.

Permits and Licenses as a source of information
In the beginning of the 19 century, companies were compelled to apply for a permit or license before they were able to start their company. The companies were confronted not only with the necessary permits to establish their company but also with the regulations and permits necessary concerning any expansion at a later stage of the company. Because the local authority enforced these regulations it became possible for the general public to make an appeal or an objection against any new expansion that had been applied for by a company. After analysing and classifying these objections and appeals into types of companies, types of work, size of the company and the dates on the forms, a general pattern emerged showing the public’s objections. Many of the public’s objection forms have been archived together with the permits and licenses, therefore a reliable resource has become available. This research project did not only look at the public objections but also looked at the role and the influence of the government.

The development of Harlingen
Because the research had to show the influence of industry against the living environment, a town with both of these elements was necessary. The town of Harlingen was chosen for this research because of its large industrial area and because of its large and densely populated housing areas. To enable the research to achieve a true image of Harlingen, the information about the towns development was gathered using different points of view. Because industry and commerce has a central role in this research attention detail was given to the social / economical development of the town. From the 17th century until the beginning of the 20th century Harlingen had become an important industrial and harbour town. After Amsterdam and Rotterdam becoming the third most important harbour town in the Netherlands. In the 19th century Harlingen became the largest butter exporter in the Netherlands. In the 1920’s and 1930’s economical disaster hit the town. Traditional companies like the tile and pottery works, the salt works, sawmills, rope and rigging manufactures and even the sail makers all left or stopped production. They did so because of the location of Harlingen, the infrastructure to the rest of the Netherlands was insufficient as was the water depth of the Waddenzee and of the harbour. Another factor was that the relatively small amount of industry in the north of the Netherlands warranted not enough trade. Some new companies took the place of the old ones, these companies needed a harbour for bulk transport such as the timber merchant, hide importers and the meat exporters. Because these companies were dependant on ships for transport they all located as close as possible to the harbour. This was in general on the south-west side of the town where in the 19th century access had been created into the town after demolishing parts of towns’ perimeter wall and by filling in some of the towns moats. The economic crisis that occurred after the Wall Street crash in 1929 had a direct effect on the companies in Harlingen. They were forced financially to operate at a minimum level which continued until after the end of the Second World War.

After the end of the Second World War, Harlingen became more prosperous and with aid from the government the fishing fleet and the accompanying industries created a positive environment encouraging new companies to invest in Harlingen. Another very important aspect for Harlingen was the completion of the Afsluitdijk in 1932. This gave Harlingen direct access to the south and it became the only sea harbour in Fryslân. The increase in the fishing industry created work in other sectors as well. Shipbuilders were necessary for the growing fleet. The gradual growth in wealth in Harlingen created different opportunities in other sectors of business, tourism, hotels, restaurants and shops all profited from the growth creating many new jobs. The history of Harlingen was
also promoted by the local town council in the 1980’s and with its sea going vessels (Bruine Vaart) in port, the sea harbour became famous and also became host to many seafarers, creating even more work. In 2004 the ‘New fishing harbour’ on the inland side was enlarged in the north-easterly direction.

**Research model**

Using the objections and appeals that had been registered in Harlingen a research model was developed to enable the analyse’s of the influence of commerce and industry on the local community. A quick scan research revealed that it was of no importance to research the companies themselves, since was no housing area on the industrial sites and companies were certainly not going complain about themselves. To select the companies for this study three instruments were used. These instruments were chosen such that they cover almost all the possible local nuisance. The first instrument evaluates the air pollution, material and waste chemical substances, volume and noise nuisance. The second instrument is the so-called UBI-model (in English the Universal Company Category model). In the Netherlands this model is used by companies to estimate the risk for soil pollution. A third model is used to evaluate the pollution for surface water. Using these instruments a selection was made from the total of Harlingen’s industry, and put into five different categories. Of the 113 companies that emerged, 82 industrial companies were selected. To be able to evaluate the environmental consequences of the industrial period from 1870 until 2000, the choice was made to evaluate using today’s modern criteria. These criteria proved to give a more detailed and objective result than by collecting and evaluating the old data. To differentiate between different periods of time and therefore create a more detailed result, three time periods were examined, 1870–1920, 1920–1970 and 1970–2000.

**Results from the Research.**

The results show that 350 objections were lodged against the 82 companies. These objections were divided into different categories, the most important of which were new factories, factory expansion and a general aversion to the factory. During the period 1870 – 1920 the most complaints regarded stench from the factories and the resulting vermin infestation. During the periods from 1921 until 2000 chemical and waste material were generating more and more complaints. In the period from 1870 –1920 sound and noise nuisance together with surface water pollution was hardly mentioned.

The results also showed a distinction in social groups between the early period whereby the lower classes complained more but in later years it was the turn of the middle class to complain. Only a few complaints were ever received from the higher class community. From the 82 companies, 40 were confronted with these complaints, most of the complaints were related to the neglecting or non compliance regarding the permit or license regulations. The research shows that 93% of the companies that received a complaint via the local government took action to solve the problem, 7% needed a little stronger persuasion in the form of large fines if within a set period no action had been taken to comply with the governments regulations.

Initial results show that air pollution (stench) caused 6 times more complaints, pollution regarding dust and waste 1.8 times and noise nuisance 4.6 times. Translating these figures into the number of industrial companies in Harlingen it becomes evident that in total 50% of the companies caused some form of air pollution (stench), 8% dust and waste and 18% noise nuisance.

**Comparison between the actual facts and the perception of the inhabitants**

Results show that there is a direct relationship between the presumed outcomes in this research and the complaints that had been lodged. The conclusion that could be drawn from this was that not only was there written evidence that the public complained about different kinds of nuisance but the results prove that there was definitely environmental nuisance.

Between the 1870’s and 1920’s companies were only confronted with complaints from the public as a last resort. Companies that caused air pollution (stench) were systematically moved away from any housing community. Soil pollution played no role in this period. Between 1920 and 1970 the main complaints were regarding stench, soot from chimneys and chemical discharge, onto surface water. There were many more complaints submitted in this period. As a result the government became more efficient in her controlling and enforcement. Moreover as a result of the actions from the government companies were forced to comply with the new rules and regulations and therefore lost some of their autonomy.

Companies were developing new products and therefore new and complex methods of production. This resulted in a lack of knowledge of the local authorities controlling services. This was compensated by the government introducing their own testing and monitoring services, which was later transferred to the provincial and water authorities. The distance between the companies and the different controlling services became even greater. In the period from 1971 to 2000 society had a strong and powerful opinion regarding all kinds of pollution. With all its rules and regulations the government created an environment for the industries which encouraged them to move to large industrial sites that were located as far as possible away from any housing sites. This resulted in a decrease of com plaints and objections from the general public. The government invested heavily in departments of inspection, gathering...
knowledge and information which enabled new legislation to be made and therefore enforcing the rules and regulations. This professional organisation created such an impact within the companies because of its powers to fine and revoke licenses that companies started to incorporate the environmental issues and regulations into their companies' policies.

**Evaluation of the research**

Base on the collected data, it became evident that a generic method of measurement could be developed and applied to enable research into the environmental nuisance and perception. Evaluation has shown that it is possible using today’s measuring methods and current criteria, suspected areas of pollution and therefore public nuisance to compare with the observations and complaints that were made regarding the pollution many years ago.