THE PROCESS OF LEARNING AMONG WORKING CLASS RESIDENTS IN THE MEREBANK/WENTWORTH AREA, DURING THEIR STRUGGLE AGAINST THE EFFECTS OF POLLUTION

BY

SANDRA GOUNDEN

This thesis is presented in partial fulfilment of the requirements for the degree of Master of Education (Adult and Community Education) in the School of Community and Adult Learning, University of Natal, Durban.

2002

Supervisor: Professor A. von Kotze

Declaration

This dissertation represents original work by the author and has not been previously submitted in any form to any university. Where use has been made of the work of others, this has been duly acknowledged and referenced in the text.

Signed: _____

Date: _____

ACKNOWLEDGEMENTS

1. Had it not been for my supervisor, Prof. Astrid von Kotze, whose encouragement and patience were like water and sunshine to a budding flower, this work would not have come into fruition. Her guidance, constructive criticism, understanding and support throughout this thesis (often under extremely trying circumstances) are greatly appreciated.

2. Special appreciation to my two daughters Micailah and Cherzanne for their patience and understanding which helped in the completion of this work.

3. I also wish to express my thanks to my mother for her motivation and prayers which egged me on.

4. To all respondents who have participated and contributed to this piece of work, a special thank you to you all.

ABSTRACT

This is a case study of people living in the Merebank/Wentworth area which is highly polluted. This area is sandwiched between the Engen refinery, SAPREF, Mondi paper mill, the Durban airport and other small industries. As such it is exposed to a mixture of gases in the atmosphere which is detrimental to the health of the residents.

The residents have discovered that they cannot rely on government and authorities to bring relief to the situation and have thus made it a point to acquire 'really useful knowledge' in making industries accept accountability and "clean up their act." The study has confirmed that community organisations played a significant role in raising awareness of the pollution issue and mobilising people in social action which has resulted in the industries being pressurised to improve technology in refining crude oil.

The study aimed to explore the kinds of learning that took place when the residents collectively participated in social action. Social interaction is a salient feature of learning. The case study is 'heuristic' in nature in that the community gives new meaning to their experience. A situated learning approach based on social learning theory is proposed as a theoretical framework for the study. Data for the inquiry into the participants group learning and social action consisted of taped interviews, participant observation and analysis of documents.

LIST OF ACRONYMS

CAER : Community Awareness and Emergency Response

CBE : Communities for a Better Environment

EPA : Environmental Protection Agency

GCM : Global Community Monitor

MCC : Merebank Co-ordinating Council

MEAC : Merebank Environmental Action Committee

MRA : Merebank Residents Association

NAAQS : National Ambient Air Quality Standards

SDCEA : South Durban Community Environmental Alliance

SO2 : Sulphur Dioxide

SPEC : Settler's Primary Environmental Committee

WDF : Wentworth Development Forum

WHO : World Health Organisation

TABLE OF CONTENTS

CHAPTER FIVE FINDINGS: HOW THEY AQUIRED USEFUL KNOWLEDGE

APPENDICES

CHAPTER 1

INTRODUCTION

South Durban is the mix of industrial and residential areas running south of the Durban harbour. The progressive development of the area has been accompanied by increasing environmental problems that impact on the quality of life of adjacent communities, the most serious being air pollution. Due to environmentally racist state planning policies in the pre-apartheid and apartheid eras, marginalised black communities live in close proximity to the source of pollution. Political democratisation in 1994 has however, created a platform for local communities to demand environmental justice and claim their rights to a safe and healthy environment.

The present crisis in the South Durban Basin regarding pollution has its roots in 1950 when the Group Areas Act was enacted in parliament. This act set a tone of racial segregation where specific areas were demarcated for various racial groups. This meant that many people had to move out of their homes where they had lived for years and go and live in a strange place which they knew little or nothing about.

It was during this time that the fate and quality of life of more than 400 000 people, particularly Black, Indian and Coloured people, was decided by the apartheid government. This deliberate racial zoning of people, especially those from the lower socio-economic group, resulted in them being moved to an area that has the highest levels of sulphur dioxide air pollution in the country and the highest frequency of foul odour complaints.

Merebank and Wentworth are residential suburbs that are located in the South Durban Basin. When the Engen refinery was established in 1954, there was a further influx of people into this area as many sought employment in the industries. This led to a further increase in population in the area.

The government favoured this development as this encouraged industrial expansion. SAPREF and Engen refineries are considered major contributors to the economy of the country and thus appear to have strong support at the highest levels of the government. There was a further increase in population in the 1960's with the establishment of Mondi, the paper manufacturing factory. This was a voluntary move of people who were desperately in need of employment.

At that stage the industries were not requested by the government to present emergency measures in case of fire or lethal gas leakage. Also no National Ambient Air Quality Standards were adopted to safeguard the public against the most common and damaging pollutants some of which include sulfur dioxide, nitrogen dioxide and carbon monoxide. (The effects of these will be discussed later in the study.)

In spite of political democratization of South Africa in 1994 and the resultant abolition of the Group Areas Act, the residents are still unable to relocate to less polluted areas; firstly since they are predominantly working class, they do not have the financial means to do so and secondly since many are employed by the very industries that cause their ill health, relocating will incur extra transportation costs to and from work.

The Settlers Primary School and its vicinity is a major area of concern because it is located in Merebank in the South Durban Industrial Basin. It is situated in one of the most highly polluted areas in the world. (Sunday Times, August 25, 2002) More than half the student population lives within 2km radius of the school. The school is sandwiched between the Engen Refinery and the SAPREF Refinery. Between the SAPREF Refinery and the school is the huge Mondi Paper manufacturing factory. All of these produce toxic pollutants, which are spewed into the atmosphere causing the highest incidence of cancer compared with similar populations elsewhere in South Africa. (Sunday Tribune, September 24, 2000)

To the west of the school is the Southern Sewage Works owned by Durban Metro. This is the largest sewage plant in the Southern Hemisphere. South-West of the school about 1.5km away is the Durban International Airport. This area is the heart of the petrochemical refining industry of South Africa. (APPENDIX A) It is clear that a mixture of all these pollutants have turned this neighbourhood into a virtual gas chamber.

The majority of the pupils in the school are of Asiatic origin as the school is situated in what was classified as an "Indian area" by the previous apartheid government. This area houses people from the lower socio-economic group. All the homes in this area are one and two-bedroom semi-detached cottages built by the Durban Municipality. There are also a large number of two-storey sub-economic flatlets. Many homes are single parent homes and a significant number of households are run by the elderly on a government pension. A very large number of the population is unemployed. The gross family income of the majority of the residents is below R2000. (Health Times, October, 2002)

The residents in the Merebank/Wentworth area have taken the initiative to move from being passive victims of an apartheid policy to active participants in social change. The challenge that confronted the people was to find ways to minimise the health-risk factor. There was the development of critical thinking, political growth and the confidence to challenge what is generally taken for granted as inevitable. (Newman 1995) This started by challenging authority to address the problem. The need to challenge is defined by the environment as well as by their experience of that environment.

With the assistance of various community organisations the people began to recognise their own ability to influence decision-making. Because of their common interest, a great sense of solidarity exists between the residents and organisations. They joined together to learn and act on their social, political, cultural and economic environment to gain more control of their lives. This type of learning can be seen as learning in social action or social movement learning. According to Newman (1995) adult education in social action involves a group of people learning in order to struggle against forces like people, institutions, political movements, industries etc. that control, inhibit or constrain them in some way.

For change to take place members in social movements recognise the need to be equipped with "useful knowledge". This knowledge is concerned with defining and protecting natural rights (eg. a right to clean and pollutant free air), extending democracy (eg, freedom of speech where ordinary people can now speak out for some kind of human dignity), and also promoting concepts of community and co-operation.

As in any social movement, in order to bring about change, the people needed to learn new skills and new information. They had to examine their own values and assumptions and the values and assumptions of others. They also had to develop new forms of action to exert or oppose control. Social movements were used as sites for personal and collective learning and for the creation of new kinds of knowledge. (Holford, 1995)

An interesting dimension of learning in the campaign relates to what Freire called conscientisation. The residents moved from assuming that pollution and its related effects on health was self-evident, to learning that its eradication was something to be struggled for. They learned that action was necessary and possible for change to occur. Also their faith in experts and authority was replaced by the knowledge that they could acquire expertise, build new forms of organisations, take action and change things. (Foley 1999)

1.1 Rationale

The purpose of this study was to investigate the process of learning among residents in the Merebank/Wentworth area during their struggle against the effects of pollution. The residents are predominantly working class people who have less formal education and training than those of the middle and upper class and thus occupy unskilled or semiskilled jobs. The researcher's main concern was to explore the nature of learning during the process of collective action and the effect of individual and community involvement in their fight for clean air.

Such learning and knowledge production has given purpose to this study. With increased awareness of political and environmental injustices came an increase in community participation by people voicing their dissatisfaction. To gain

information on how the people reached this stage to challenge those responsible for the emissions, I had to speak to them in the context of their experience.

I believe that the South Durban basin and more especially the Settler's Primary School area made a perfect laboratory for the study. This area has the perfect formula for air pollution: fumes from car exhausts, sulphur dioxide and mono dioxide emissions are trapped in this basin. This has long term effects on children's lungs and is a contributory cause of asthma according to the study done by Dr B. Seetharam from the Merebank Medical Centre. Other related complaints include chest pains, tiredness on exertion and non participation in sports.

Being an educator, myself, I felt that I had a social responsibility to the children of Settler's Primary School. I was concerned about the high absenteeism rate among teachers and children at this school. I believed that this could be a reason as to why the residents in this area have not been able to move up the social ladder. For the children, the long term consequences of pollution result in poor performance in school and subsequently lower chances for university entrance. Hence the cycle of poverty is maintained.

Another motivation in conducting this study was that I have always had a passion for addressing environmental issues such as littering and waste management. I am presently the co-ordinator of an Environmental club in a school in Newlands West, whose purpose is to create environmental awareness among children, parents and the community as a whole. Just as littering and mismanagement of waste is hazardous to health, so too is the emission of gases and toxins by industries in the air. It is for this reason that I could not divorce myself from the issue of pollution and its effects on the environment.

Also in my opinion a great amount of attention has been given to the causal relationship between air pollution and certain illnesses like asthma, wheezing and skin, throat and sinus irritations. Although acknowledgement of this relationship is relevant, and people have become more aware of this, there is grave neglect of studies which demonstrate the pivotal role that adults in particular, and the community in general, have played and are playing in bringing about significant change in the environment.

Another purpose in doing this study is that I see the issue of smoke pollution in Benzi, China as a good example of the role communities play in bringing about change. When people consistently protested against the damaging pollutants that were released in the air, the government adopted ambient air quality standards to safeguard the public against these pollutants (www.wri.org). It is my belief that if the community is made aware of similar struggles elsewhere in the world they will be encouraged not to give up the struggle for clean air but come together as a collective group working towards a common goal. They could together draw comfort and be motivated by their small victories.

It is also hoped that the 1948 "killer fog" in the small town of Denora, Pennsylvania, that killed 50 and the London "Fog" of 1952, in which close to 4000 people died will be a lesson to the stakeholders of the industrial area of the South Durban Basin to heed the cry of the community so as to avoid a similar catastrophe.

Lastly, my interest in this study stems from the fact that I am a resident in the Bluff area which is approximately 5 km away from the industrial site. Being in close proximity to the SAPREF and Engen refineries, my family and I experience some degree of exposure to the pollutants in the air. Discovering that high levels

of pollution can cause airways to become swollen and inflamed, which could eventually cause permanent decreased lung function, is enough to motivate anyone living in the area to become involved in some way or other to bring relief to ailing residents. With my limited contribution to the area of study it is hoped that I will be sufficiently informed, stimulated, reinforced and challenged to make a greater input in community participation.

1.2 Research Focus

This study attempted to explore the nature of learning in an individual and collective capacity. This research is rooted in the concept of adult education in social action whose aim is to help people realise that they do have choices, and to provide them with the knowledge, skills and understanding in order to make those choices. The following key issues were addressed:

1. What and how did residents of Merebank and Wentworth learn in the process of collective action against pollution? Collective social action in this study means a group challenge to existing environmental conditions in society. It is a collective sense of righting a wrong. This collective challenge takes place in terms of a social movement in which a variety of means are used over time to challenge existing conditions. (Kilgore, 1999)

2. How was the knowledge gained beneficial to them in the struggle? How did the residents use this knowledge in their struggle against the effects of pollution? The usefulness of knowledge is judged in relation to its contribution to assisting social, political and environmental change. In other words real knowledge should serve practical ends. By the people identifying what 'really useful knowledge' would be for them, they would be able to

understand their situations better and take action in pursuit of change. (Thompson, 1997)

3. What had been the effects of involvement in the struggle for cleaner air with regard to possible engagement in public issues?

4. What was the relationship between social action and learning? Social action is taken in response to threats to certain areas of social justice like homelessness, racial and gender discrimination or pollution. (Kilgore, 1999) People collectively develop solutions to these problems. Finger (1989) refers to this process as 'learning our way out'. (p20) This is a collective and collaborative effort of those who share meaning and identity. A sense of solidarity motivates individuals to participate in the collective learning process.

5. What were the reasons and motivating forces for people's involvement in the struggle?

   According to Kilgore (1999), collective social action is not necessarily the result of individual critical reflection. People may participate in social action because they are in solidarity with people or they may have been influenced by others to be involved. Others may participate for mere curiosity. They want to know what it feels like to be involved in a struggle for justice.

6. What was the nature of their involvement?

   Community organisations initially focused on building relationships in the neighbourhood and developing partnerships with the stakeholders. The aim was to eventually expand community efforts beyond the local and to make the state responsible for ensuring the health and welfare of the citizens. In other words their goal was to organize people to help them build a political voice to challenge those in authority to address the issue at hand.

The above questions are an attempt to discover the relationship between social injustices and social action and to explore what and how the residents learn in the process of collective action against pollution. The answers to these questions should indicate the effects of the resident's involvement in their struggle for a decrease in the levels of pollution in the area.

1.3 Structure of the Theses

Chapter two outlines the methodological approach adopted to achieve the aims in this study and a justification for the specific method of inquiry is presented. Since this study focuses on the personal experiences of people and their perceptions or interpretations of what they experience, the qualitative approach was used. The natural setting of the people was a direct source of data collection.

Chapter three reviews literature from which this study is referenced. Since this study is about learning in social action, it was necessary to focus on the theory of social learning and to provide a clear distinction between the aims of the social movements under study and those of other social movements. Literature on the challenge presented to social movements in providing really useful knowledge for people to collectively engage in social action so as to bring about change in the environment was also a point of focus.

Chapter four contextualises the study by focusing on the history of environmental struggles and the history of various organisations which eventually joined under one umbrella body. Their role in the struggle was presented. The subjective meanings that people place on their experiences was also explored.

Chapter five presents the findings of the study. It explored what and how the community learnt in their struggle against environmental degradation. The type of learning that the people underwent was also explored. The focus was also on how radical education based on 'really useful knowledge' was important to bring about change.

Chapter six is an analysis of my findings in relation to the literature studied. This was done by focusing on the research questions as mentioned in chapter one. This chapter explores how people moved from believing that their illnesses were not personal troubles but issues that were experienced by the community of the South Durban Basin at large and as such had to be dealt with collectively by the community. This chapter concludes with a summary and outlook of this study.

CHAPTER TWO

METHODOLOGY

2.1 Introduction

There are two approaches to research that lead to different methods of inquiry; these are the qualitative and quantitative approaches. I have chosen to use a qualitative research methodology. The main reason for doing this is that, as Merriam and Simpson (1995) have so aptly described, is because, "the overall purposes of qualitative research are to achieve an understanding of how people make sense out of their lives, (rather than the outcome or product) of meaning-making, and to describe how people interpret what they experience" (p98). In this study I want to find out what and how people from a low socio-economic background learn to bring about change regarding environmental issues.

This approach is based on a certain assumption about how to best understand and come to know what is true or what constitutes reality. This type of inquiry differs from theory-testing approaches in that there is no manipulation of variables and no predicted outcomes. The phenomenon, in this case, the residents, were interviewed and observed and from the data collected an explanatory framework emerges. (Merriam and Simpson, 1995)

With the interpretive/constructivist (qualitative) research, reality seems to be socially constructed by individuals interacting with their social environment. Rather than a single objective reality, there are multiple realities, "each related to the complexity of naturally occurring behaviour, characterized by the perspectives of the participants" (Cohen and Manion, 1984, p93).

The positivistic (quantitative) approach is based on the assumption that phenomena should be studied objectively with the goal of obtaining a single true reality. Here the researcher takes a neutral role, one that does not influence what is observed or recorded. The emphasis is on an empirical study through the use of numerical data that is verifiable by observation and evidence. In other words, the purpose of quantitative research is to describe phenomena numerically to answer specific questions or hypotheses.

With qualitative research or field research as it is sometimes referred to, the researcher may recognise several expressions of attitude or behaviour that might escape researchers using other methods. This is possible because the data collection method is less structured and more interactive and numerical data are used only to provide simple descriptions. The emphasis is on language to most closely describe and interpret people's feelings and experiences.

At the outset I need to make it clear that the researcher using the qualitative approach plays a major role in the intervention as well as being the person collecting and analysing the data. This is a bias that cannot be avoided.

The data for this qualitative study had been collected by using three strategies, namely; interviews, observation and document review.

2.2 Type of qualitative research used

There are basically three major types of qualitative research namely; Ethnography, Case Study and Grounded Theory. They all draw from the same assumptions and are characterised by: "the goal of the research being understanding, the researcher is the primary instrument of data collection and

analysis, in most instances it involves fieldwork and the inductive building of concepts." (Merriam and Simpson, 1995, p98)

2.2.1 Ethnographic Research

Ethnography basically refers to the methods or techniques used to collect data. By using ethnographic techniques like interviewing and observation, my aim was to uncover the social order and meaning the situation has for the people actually participating in it. The concern was with what the reasons and motivating forces were for people's involvement in the struggle. A great deal of time had been spent in the setting being studied. There was a need to establish rapport with the residents of the setting and maintain some type of relationship with the subjects.

Ethnographic research has four characteristics which were of particular interest to this study. Firstly, ethnography studies real-world settings, typically by focusing on a particular location and point in time. Secondly, the approach is holistic, aiming at whole phenomena, in this case the nature of learning among residents in the Merebank/Wentworth area. Thirdly, the work is multi-method, which draws on a variety of research techniques. There was a combination of, for example interviewing, detailed observation and a systematic collection of documents and photographs. Fourthly, ethnography is interpretative and aims to represent the participant's perspectives (Hamilton, 1995).

The present study is to an extent ethnographic in nature since it entails producing a scientific description of the process of learning of a specific social group, namely, residents of the Merebank area and in particular, the area around the Settler's Primary School, during their struggle against political and social injustices.

The research is concerned with contemporary or real-world settings. Pollution is a global issue and communities are mobilising to eradicate or decrease the levels of pollution, more so in residential areas. Individual life experiences were examined in relation to the immediate social environment and in relation to comparative experiences of those in similar situations.

Great cognizance was taken of the voices of residents who participated in collective action against stakeholders in industries responsible for the emission of pollutants in the area. The life stories were told in the resident's own words and terms. By listening to their life stories, I was able to give voice to the voiceless. This is one of the strengths of this approach because to those who have been silenced, it offers the platform for them to speak in their own words about their experiences (Clark, 1998).

By understanding the residents within a context of a life history, I was able to identify significant moments and experiences which, according to the residents, have shaped their present lives. This enabled me to establish the reasons for their involvement in collective social action. In using the ethnographic approach, I have attempted to develop a holistic understanding of the relationship between social injustices and social action. In the present study I looked at how, through the introduction of the Group Areas Act, many working class people were relocated to the industrial area where the emission of pollutants is high. The resultant effects of the pollution created an awareness of the cause of many of their respiratory and skin related illnesses.

2.2.2 Case Study

Merriam and Simpson (1995) define a case study as 'an intensive description and analysis of a phenomenon or social unit such as an individual, group, institution or community. (p110) 'Its focus is on investigating many, if not all, variables in a single unit.

This research is based on a case study which focuses attention on one social phenomenon, that is, the experience of working class people living in the South Durban Basin with pollutants. The chief purpose of this case study was to give a holistic description and interpretation of the learning process in social action. The content was determined by the purpose. The emphasis was not on what is produced but how it is produced. How do people get to work together as a productive unit to bring about change?

One of the essential properties of a qualitative case study is that it is 'heuristic' in nature. In other words, it can bring about the discovery of new meaning, extend the reader's experience or confirm what is known. The case study approach is also useful for further investigation because it reveals important variables or hypotheses.

Some of the limitations, however, are that it can be expensive and time consuming, since training in observation and interview techniques are necessary. Also case study narratives are generally long and policy makers and readers have little time to read them. It is also difficult to write a narrative that meets the needs of unknown readers. Another limitation is that findings from case studies cannot be generalized as each user will focus on different aspects of the study (Merriam and Simpson, 1995, p111).

Since this research is not concerned solely with the cultural context, which would have made it a purely ethnographic study, but with describing and interpreting the involvement of working class residents in social action from the perspective of the researcher, makes this also a case study.

For this qualitative study I used triangulation to cross check the research findings. Three techniques in collecting data were used namely: interviews, observations and analysis of documents. An explanation will be given for each technique to justify its use.

2.3 Data Collecting Techniques

2.3.1 Triangulation

> Triangulation as a form of cross-checking research findings is a widely accepted means of ensuring validity. Triangulation basically involves looking at the research topic or problem from a number of different vantage points in order to check whether similar pictures are produced. If not, the validity of findings and their interpretation are questionable. This study used multiple data sources and techniques of data gathering which is the most common form of triangulation. The more sources and types of data we can gather and compare, the surer we can be of the validity of our overall findings and interpretations (Davidson & Layder, 1994, p53).

2.3.2 Interviews

I interviewed fifteen residents who were generally working class people, living in the Dinapur Road flats which is one of the poorest sections of the Merebank area. Other stakeholders like Des D'Sa, Dr Seetharam and Denny Larson were also interviewed to obtain data for my research. This is a natural form of interacting with people which gave me the opportunity to get to know people quite intimately so that I could really understand their feelings and experiences. According to Cohan and Manion (1984) "Knowledge needed to understand human behaviour is embedded in the complex network of social interaction" (p89).

I saw the interview as an opportunity to delve into and explore precisely those subjective meanings that people place on their experience of social inequalities. My concern was not with obtaining accurate replies to closed-ended questions but in obtaining full and sincere responses to relatively open-ended enquiries. According to Davidson and Layder (1994, p121), "The interviewee is not a research 'subject' to be controlled and systematically investigated by a 'scientist', but a reasoning, conscious human being to be engaged with."

When an interviewer enters into an interaction with an interviewee, he or she needs to be prepared to respond flexibly to the interviewee as an individual, subjective being. Each interviewee and therefore each interview should be seen as different and individual.

A number of key issues were raised in a very conversational style. Ideally the respondent should do most of the talking. Babbie (2001, p292) says that, "If you're talking more than five percent of the time, that's probably too much". Although the uncontrolled environment of the interviews may undermine the

validity of the study from a positivist perspective, from an interpretive perspective this context is the key to valid research because interviews generally get better co-operation and fuller answers than questionaires (Terre Blanche and Durheim, 1999, p35). By using the interview technique I had the opportunity to come face to face with my respondents in their homes.

Observations had been made regarding the quality of the dwelling, the presence of various possessions and the respondent's ability to speak English. Also body language, facial expressions and tone of voice provided me with valuable information that a written response could not have conveyed. These observations had given me an idea of their reasons for participation or non participation in the struggle for clean air. With prior consent of the interviewee, interviews had been tape-recorded and observations had been noted in notebook. .

In the interview I had the opportunity to probe and go deeper into the motivations of the respondents and their reasons for responding as they do. Although I had a general plan of inquiry, I did not think it necessary to have a specific set of questions that would be asked with particular words and in a particular order. This characterizes a structured interview and the interviewer has little freedom to make modifications. This would be a closed situation. But at the same time I realized that it was vital to be fully familiar with the questions to be asked as this would allow the interview to proceed smoothly and naturally.

I favoured an unstructured interview approach, which is an open situation, and there is greater flexibility and freedom. Rather than just reading a list of questions, the interviewer plans follow up probes tailored to the responses to specific questions and throughout the interview the interviewer strategizes about

how best to achieve the interview objectives while taking into account the respondent's answers.

The questions of my interview schedule had been designed in a way that had encouraged my respondents to be completely free to express their answers as they wished, as detailed and complex, as long or as short as they felt was appropriate (Bless & Higson-Smith, 3rd ed.). (APPENDICE B) This was done in the hope that I would be able to gather as much information as possible.

These open-ended questions had allowed interviewees to tell their stories about their situation and reveal their values and attitudes. My aim was to ensure that the questions were understood and answered in a full manner. Supplementary questions were sometimes asked to get additional information and to check that the respondent was not making it all up. (Peil, 1982, p112)

Although the research purposes governed the questions asked, the sequence and wording were entirely in the hands of the interviewer. Therefore great care had to be taken to ask and phrase questions in a neutral way, because if I, the interviewer made it plain through facial expressions, intonation or verbal comment that certain views were either desired by, or unacceptable to me, the respondent would have likely modified his or her responses. No one would wish to confide details of social action to an interviewer who was plainly against people protesting against the state for example.

Some general guidelines were adhered to when interviewing. Since the interview was conducted mainly in the working class community, I had to dress in a fashion similar to that of the people. A richly dressed interviewer would probably have had difficulty getting good co-operation and responses from poorer respondents.

Another helpful hint that I had to remember was that of confidentiality and anonymity. Because I was in a way prying into a respondent's personal life and attitudes, I had to communicate a genuine interest in getting to know the respondent without appearing to spy. I thought that by being more warm, friendly and relaxed, without being too casual, I would be more appealing to talk to. Establishing good rapport is a vital element of the interviewing process. According to Davidson and Layder (1994, p122) "rapport is tantamount to trust and trust is the foundation for acquiring the fullest, most accurate disclosure a respondent is able to make."

Since the respondents are asked to volunteer a portion of their time and to divulge personal information, they deserve the most enjoyable experience the interviewer can provide (Babbie, 2001, p259). Whenever possible I tried to introduce some humour to lighten the atmosphere and make it less tense. Also since they, through the system of apartheid have been deprived of a 'voice', I allowed them to speak as they wished and as much as they wished.

So as to acquaint myself with the interview questions and the flow of the interview, I thought it would also help to try out the interview with a few acquaintances in the area. The purpose was to make amendments to the phrasing of questions or any other problems that may arise.

Depending on the number of interviews to be conducted, some interviewers may have to pay more than one visit to the area. In the present study, although it became necessary at times, this was not a major problem as living in close proximity to the area under study reduced this expense.

Another important problem of interviewing is that because it takes up a great deal of time, it is not possible for the researcher to study large samples of the population. Thus the generalizability of the findings is questioned. In other words, could the findings of one setting be generalized to other similar settings?

The use of multiple methods of data collection has helped increase the validity of the findings in this study. Another tool that was used in this study was participant observation.

2.3.3 Participant Observation

It is not always possible to reveal the complexity of people's lives, their experience and their subjective attitudes by means of interviews and documents. Thus observation and, more especially, participant observation helped in this respect.

Observation can range from being a complete observer, one who is unknown to those being observed, to an active participant observer, ie. one who is a member of the organisation and participates while observing (Merriam and Simpson, 1995).

Participant observation is most useful when collecting information on groups with whom contact is difficult to achieve during a short or formal visit especially those from the working class. This method can encourage trust to develop between the researcher and that community to such an extent that the researcher can move through the community and talk to the people far more freely than would otherwise be possible. The advantage is that the researcher would get to know a much wider spectrum of people which would include the young and old, female and male, the influential and disregarded.

Participant observation was used as another research tool as attending community meetings was seen as another means of collecting data. I had to establish rapport and trust with the residents and become familiar enough to gain insights into their life situation. Becoming an insider allows a deeper insight into the research problem, since the researcher enjoys the confidence of participants and shares their experiences without disturbing their behaviour.

Participant observation is a very demanding and time consuming way of gathering data and may involve extended periods of residence among respondents. Bless and Smith (1995) says that since it is not always possible or practical to reside with the subjects being researched, a 'modified participant observation' method may be preferred. It was for this reason that I decided on the limits of my commitment. I had restricted participation only in major events such as mass community meetings. Attendance at community meetings involved intermittent observation, as they were not held on a daily basis. This afforded me the opportunity to do a comprehensive investigation of the events, behaviour or responses in their natural setting.

At meetings I had to ask questions and make suggestions regarding the struggle so as to be 'part of the gang'. (Many interviewees had attended mass meetings and I had mentioned during my interviews that I was a resident experiencing the same problem.) If this was not done, then there would have been little to explain my presence. At the same time I had to be as objective as possible while collecting information (Cohan and Manion, 1984).

This however is a weakness of this method as researchers risk losing their objectivity. Being directly involved with people and their daily concerns for a period of time may predispose one to be emotionally engaged with them and it may become difficult to detach oneself from the people and events. Also,

because notes may have to be taken down secretly or from memory, inaccurate information may be recorded.

Another shortcoming of the use of participant observation as a research tool is that, it can be very difficult to cross-check the participant observer's findings because the specific time of the research, the network of personal contacts and the research framework employed may together mean that another researcher could not in any simple sense 'reproduce' the first study. Social life cannot be repeated in the way a laboratory experiment with controlled variables can be repeated (Peil, 1982, p64).

2.3.4 Documents

Unlike interviews and observations, the record method is a non-reactive research method which does not involve direct interaction with the people. Information about, for example a social group, could be gathered from public documents rather than direct interaction with them. These documents may include historical documents, reports on court cases, photographs, biographies etc. This method of data collection is only useful if used in conjunction with other techniques.

A letter was sent to the head of the Merebank Residents Association (MRA) to gain permission and access to the use of these documents. The MRA has collated information regarding the dissatisfaction of people who feel they are environmentally and politically exploited. They have a surprising amount of basic information, newspaper cuttings of real life stories of people experiencing environmental exploitation and aerial maps which were used in the research study.

2.4 Population and Sampling

Since it was almost impossible to study all the members of the population that interests me and I could never make every possible observation of them, I selected a sample from among the population that ideally could be collected and studied.

In the present study regarding the process of learning in social action, the relevant population is the working class population in the South Durban Basin and more specifically those living around the Settler's Primary School area.

Although this setting provided a convenient boundary, as Merebank is a large residential area, from which to draw a sample of informants, some attention was given to the wider social structure and context, which figure importantly in people's lives. If this was not done then the study itself would have been open to criticism that its focus was too narrow to be realistic.

Because there is no single list of the names of the working class residents, I turned to the MRA who have a list of names and addresses of complainants and to Dr B. Seetharam who is a well known medical practitioner in the area. These informants were useful in that their position allows them to interact regularly with members of the community. Dr Seetharam is also one who has carried out extensive research regarding the causal relation between pollution and certain illnesses like asthma, cancer and skin irritations. This strategy is characteristic of the method of 'snowball sampling'.

Snowball sampling is one form of nonprobability sampling which is useful when conducting an exploratory study. (Others include: reliance on available subjects, purposive or judgmental sampling and quota sampling.) By identifying one

member of the population as introduced by the MRA or Dr Seetharam, I was able to interview them and in the course of the interview asked them to identify others sharing a similar plight who were actively involved in the struggle against the effects of pollution. In this way the sample 'snowballed' in size as each of the interviewees suggested other people to interview.

At this point I would like to explain how I would find order in the qualitative data collected.

2.5 Data Processing

As I was in possession of a growing mass of data, gathered through interviews, participation and documents etc, I saw a need to order them. By coding the data in terms of the main focus of the research I was able to condense the data.

I had classified/categorized individual pieces of data, collected from taped interviews, attendance at mass public meetings etc, according to the various research questions so as to allow me to retrieve the information that I was interested in later. This was done manually on a large chart with the names of interviewees running horizontally and each research question listed vertically. The responses of interviewees, in this case the residents, had then been recorded in the various categories of questions. Because my focus was on what and how residents learnt during their struggle for environmental justice, I had to go to the question on; 'What did the residents learn?' and 'How did the residents learn?' and look at all the responses of the interviewees. Retrieving this information had thus been straightforward. I had then looked for a pattern among the data that assisted me in a theoretical understanding of social learning.

From the theory, as will be discussed in chapter three, I have found that the learning by residents is related in many ways to the theory of social and situated learning. Much of the learning by residents takes place in their lived experiences. Their learning of the effects of pollution on health, scientific information, the need to challenge those responsible for the high levels of pollution, taking samples, the need to vary tactics in their struggle through reflectivity all takes place in the context of their experiences.

I have found that their participation in bringing about change in the environment began when they named and created meaning from their daily activities. The people were given an opportunity to investigate the injustices and problems they experienced. On realizing that they had been victims of environmental degradation, they began to interact with other people in the community in an attempt to solve the problem. It is for this reason, the shared vision of social justice, that they engaged in collective social action.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

The aim in this chapter is to present research on the theory of social learning, learning in social action, social movements and the meaning attached to radical education from which the present study could be referenced.

3.2 Social Movements

A brief summary of literature on social movements will be presented so as to draw a distinction between the aims of the social movements under study and other social movements or orgnisations. Social movements as sites of learning will then be explored which will be followed by a brief explanation of the theory of social learning.

One of the most distinctive characteristics of modern society is the extent to which people today are willing to act collectively and purposefully in order to oppose or promote social and cultural change. Among the most important ways this is accomplished is the social movement which is a collective effort to produce social change that relies heavily on relatively non-institutionalized methods (Popenoe, 1995).

Because social movements seem to be committed to the righting of what their supporters perceive as injustices, most of them cannot avoid having significant political implications.

In order to influence public opinion on critical issues, like environmental degradation, they effectively utilize propaganda techniques and engage in mass demonstrations and marches.

According to Popenoe (1995, p488), social movements include several crucial elements like: ideologies, strategies and tactics and leadership. The community organisation's ideology in the South Durban Basin stressed the importance of environmental justice such as the right to pollutant free air, right to proper housing etc. The strategies and tactics varied on reflection of their effectiveness. They ranged from marches, picketing to the legalistic approach where they won the first part of the court battle against the installation of a methane gas pipeline near the homes of the residents. These strategies attracted extensive media attention and expanded the movement's support base. Finally social movements are characterised by different types of leaders. On the one hand you may get those leaders who are highly charismatic. On the other hand you may get those who are effective in helping the community to bring about change and yet prefer to remain anonymous.

According to Newman (1999) social movements can be characterized as structured eg. trade unions, semi-structured eg. human rights activists and environmentalists, and unstructured social movements eg. those engaged in the campaign to prevent the spread of HIV/AIDS.

Finger (1989) saw a similar distinction in social movements. To him social movements could be divided into two categories; old movements and new movements. He saw the labour movement and Third World movements as examples of old movements which fought for economic, social and political justice and emancipation. People joining new movements on the other hand fight for a 'new personal relationship with modernization like science and technology' (Finger, 1989, p18).

Unlike old movements, mass demonstrations and marches in contemporary or new movements, as Finger (1989) calls it, do not frequently turn into riots. Much of the time and energy is devoted to bargaining with and sometimes threatening

the authorities to compel them to institute the changes desired by the movement activists. They also spend a great deal of time developing relationships with other organizations that are seeking similar goals. In the present study, 'leaders' like Desmond D'Sa (SDCEA) and Lawrence Vartharajulu (SPEC) a staff member at Settler's Primary School, made representation on behalf of the residents to make the industries accountable for polluting the environment. They joined forces with the Global Community Monitor (GCM) to assist them in gathering and documenting evidence against the industries. More details on this networking will be discussed in chapter 5.

The research under study looks at semi-structured social movements such as the Wentworth Development Forum (WDF), Settler's Primary Environmental Committee (SPEC), the Merebank Environmental Action Committee (MEAC) and the South Durban Community Environmental Alliance (SDCEA). These movements are networks of people. The activists have taken on the roles of organisers.

Although in these semi-structured social movements there is no formal membership the people have a strong sense of belonging and they share the desire for the eradication of pollutants in the atmosphere. They see themselves as working collectively towards this future.

People like Desmond D'Sa played a significant role in one such social movement. He is presently the chairperson of SDCEA. He was moved by the injustices of the apartheid government and infant mortality rate caused by the emission of pollutants by the industries and angered by the ignorance that often went with it. He therefore urged them towards action (Palan, 2001)

Through this social movement he, together with others with the same zeal, aimed at providing people with the knowledge and skills to take control of their own lives. He was instrumental in bringing experts into the area to offer advice on

environmental risk assessment. He organised public meetings and wrote to authorities concerned regarding the grievances of the people. Thus his tireless efforts won the support of the community.

Social movements like the SDCEA continually challenged people to make choices and to act to bring about social change. According to Finger (1989) 'social transformation' is possible if linked to 'personal transformation'.

A challenge for social movements is to provide learning that is really relevant and facilitate the generation of knowledge that is really useful. If this is made possible then, Finger (1989) says that the process of "learning our way out" of the crisis is more longlasting. Newman (1999) supports the view that "social movements are sites of struggle and the learning done and the knowledge generated will be put to the test by people engaged in the struggle" (Newman, 1999, p132).

3.3 Theory of Social Learning

Wenger (1998) says that we should not look at learning as just an individual process that has a beginning and an end but rather see learning in the context of our lived experience of participation in the world. In other words learning in essence is a social phenomenon whereby we become active participants in social movements. This kind of participation gives us a sense of belonging even though membership is not made explicit.

This aspect of social learning theory is related to Lave's concept of situated learning in that she sees learning as essentially a matter of creating meaning from the real activities of daily living. If the subject matter is in the context of real-world challenges then acquisition of knowledge is made simpler. Relationships with other participants, the activities, the environment and the social organizaiton of the community are all important in creating meaning (Lave & Wenger,1991).

According to Lave (1991), a situated learning experience is guided by four major premises:

1. Learning is grounded in the actions of everyday situations.
2. Knowledge is acquired situationally and transfers only to similar situations.
3. Learning is the result of a social process encompassing ways of thinking, perceiving, problem solving and interacting.
4. Learning is not separated from the world of action but exists in social environments made up of actors, actions and situations (p32-35).

People do not acquire information in discrete packages but learn the content through activities. The content is inherent in the doing of the task and not separated from the noise, confusion and group interactions prevalent in the environment. For example the people in the South Durban Basin learn that the pollution levels are high when they take the samples during this time. The subject matter emerges from the cues provided by the environment and from the dialogue among the learning community. Lave says that knowledge is obtained by the processes described as "way in" and "practice." "Way in" is a period of observation in which a learner watches a master and makes a first attempt at solving a problem. Practice is refining and perfecting the use of acquired knowledge (Lave and Wenger, 1991)

Situated learning places the learner in the center of an instructional process consisting of the following:

- **Content** situated in the people's daily experiences becomes the means to engage in reflective thinking. By the content being placed within the daily encounters of life, the social movement negotiates the meaning of content and provides opportunities for the people to co-operate in investigating problem situations.

- **Context** refers to notions of power relationships, politics, and the learner's interaction with the values, norms, and culture of a community. The people are in the experience rather than being external to the event. The context provides the setting for examining the experience. The context in which people learn and their interaction within the group are important aspects of the learning process.

- **Participation** describes the interchange of ideas, attempts at problem solving and active engagement of people with each other. Learning occurs in a social setting through dialogue and interaction with others in the community. Learning becomes a process of reflecting, interpreting, and negotiating meaning among the participants of a community.

- **Community of Practice**- Community provides the setting for the social interaction needed to engage in dialogue with others to see various perspectives on any issue. (Lave and Wenger, 1991)

We all belong to communities of practice which are an integral part of our daily lives. This includes the home, the workplace, the community organisation, school etc. We may be core members or have a more peripheral kind of membership. In other words, "learning is a process of participation in communities of practice, participation that is at first legitimately peripheral but that increases gradually in engagement and complexity" (Lave & Wenger, 1991, p34).

When we are challenged by situations we sometimes respond in a more focused manner. This may require social movements for instance to work towards community building and ensuring that participants have access to resources necessary to learn what they need to learn in order to take action and make decisions that fully engage their own knowledgeability (Wenger, 1998). We see this in effect in the South Durban Basin during the bucket sampling when

residents collectively learnt to take samples of high levels of pollution to make industries accountable.

According to Kilgore (1999), to understand learning in a social movement one should not only look at the group as a learner and constructor of knowledge but also the group's vision of social justice that drives it to act. She says that social movements should be seen as providing conditions for emancipatory learning in which the people make sense of their lives through critical reflection. According to Mezirow (cited in Kilgore, 1999), imposing our beliefs about a need for social change beyond the learning experience would be indoctrination.

One can understand how groups learn by looking at how people, through their shared vision of social justice, engage in collective social action. People collectively and collaboratively develop solutions to problems in society. Milbrath (1989) calls this, 'learning our way out' (Kilgore, 1999, p196 & Finger, 1989, p20).

The social values that the individual brings to the group and the social value that groups construct together are important in understanding social learning. Individuals have a sense of identity, agency, consciousness, sense of worthiness and a sense of connectedness. Much of their self-identification involves them being members in groups and their relationship with other people. A sense of consciousness makes them aware of being autonomous actors. They have an affinity to others and are capable of making things happen (Kilgore, 1999).

Collective learning consists mainly of the construction of collective identity, group consciousness, solidarity and organisation. Collective identity allows individuals to remain in control of their actions yet interact with other members of the collective as a unified body (Kilgore, 1999). In essence, her view is that the collective learning process of developing a collective identity and the nature of that identity (shared goals, meanings, strategies) is more important than the individual's learning. To her, a vision of social justice and the means to achieve it

are primary components of learning in a social movement and learning is essentially about coming together to make the kind of knowledge that makes sense of their world and helps them to act collectively upon it in order to change it.

Since groups have a diversity of members there is potential for conflict as diverse ideas and experiences collide. We learn by resolving contradictions, thus conflict is crucial to collective learning. And with each collective action against social injustices, solidarity is reinforced. A sense of solidarity motivates individuals to participate in the collective learning process.

3.4 Collective Social Action

Social action is a response to threats of social justice. Kilgore (1999) sees collective social action to mean a group challenge to unjust conditions in society.

In other words social action can be seen as a vehicle for social change and local empowerment. Social organizing contributed to that process whereby local work was a means or strategy to achieve that end. It involved direct participation of the people in matters that concerned them. (The struggle in the South Durban Basin ensued because of the concern of residents of the impact of pollution on their health and daily lives.) The people involved in social action have identified their interests, understand the conflicts and contradictions of the wider society and relate them to the wider social and political struggles

All social action involves some form of learning and this learning could either be incidental where people campaign against the manufacture of gasolene in a residential area and inadvertently learn about chemicals and its effects on health or non formal where people become aware of their potential for learning and make a decision to learn from those experiences. Learning may also take on the form of informal education in that it is organised but not particularly undertaken in a structured format. It is participant directed and one off. By examining informal

learning we see the dynamics of community based learning. Formal education is systematic and structured and is not the main form of learning among the working class communities in this study (Newman 1995).

In terms of social movements a variety of means or resources are used over time to challenge existing conditions. These resources may include knowledge, competencies, insight, money, patience etc. The lack of particular resources may be compensated by the presence of others. For instance in the South Durban Basin the community groups lack political power but they succeed in getting their issue on the political agenda due to patience, Juridical knowledge, cunning and sympathy, or a combination of these resources (Wildemeersch et al, 1998).

To achieve social justice it is necessary to engage in collective social action. Kilgore (1999) cites Frederick Douglas who aptly wrote, "Those who profess to favour freedom and yet deprecate agitation, are men who want crops without plowing up the ground, they want rain without thunder and lightening" (Kilgore, 1999, p194).

There are many reasons why people do participate in collective social action.

- Sometimes people do not fully grasp or agree with the vision of a social movement but they participate because they want to be around their friends.
- Sometimes people participate because those asking them to participate have in the past supported their course.
- Sometimes various organisations have overlapping concerns for example environmental justice groups and human rights groups who fight against high levels of pollution in residential areas.

There are also reasons why people do not participate in collective social action.

- Sometimes there are personal risks involved. For example, fear of losing ones job.
- Some may not have the time or money. They may work long hours.
- Some may lack faith in themselves and the success brought about by collective social action (Kilgore, 1999). They believe the efforts will be futile, as it is impossible to bring down a 'giant', like the refinery.

However through persistence and endurance people throughout the world are gaining victories. One such example is the smoke pollution in Benzi, China. For years people protested against its damaging effects. To date the government had adopted ambient air quality standards to safeguard the public against these pollutants (www.wri.org).

In Hungary 44% of the population live in areas with very serious air pollution for example in a place like Budapest (a city with two million people) the level of air pollution is much higher than permitted by the Hungarian health standards. The concentration of several hydrocarbons (including highly carcinogenic substances) was over the limits. According to recent health reports in Budapest many children have more lead in their body than is permitted for an adult industrial worker. The community rallied together, addressing significant members in authority and subsequently has the National Ambient Air Quality Standards (NAAQS) in place (www.wri.org)

A similar study to the one being embarked on is that of the pollution problem in the Kagiso township near Johannesburg, where people from a lower socio-economic background reside. From as early as the 80's residents were protesting for mine owners to rehabilitate the mine dumps. When it is windy people close their windows and do not venture out because if this poisoned sand is inhaled it is immediately dissolved into the blood stream, which results in asthma, lung and kidney diseases (SABC 3, Special Assignment, 1999).

In protest, they demonstrated and petitioned against the mine dumps. Helen Nichols, an advocate from the Legal Resources Centre, decided to take up the plight of the people with low education and challenge those in authority to relocate the mine dumps. The people felt empowered when they realized that they could use the law to their advantage and bring about change.

3.5 Radical Education / Really Useful Knowledge

Radicalism has its own definition of "really useful information". It refers to a sense of what is really important to know. Real knowledge should be relevant to the problems experienced in life. In the words of the radical movement's early protagonists, the struggle for really useful knowledge is designed to make you free because it enables ordinary people to understand the world as they experience it in order to change it for the better. In radical education the acquisition or production of knowledge is highly valued. According to Johnson, the emphasis in radical movements is "to inform mature understandings upon citizens, both child and adult, of a more just social order (Johnson, 1979, p21).

Through dialogue with neighbours and friends the people learnt that they experienced similar health problems and by attending community meetings they drew their own conclusion that the emission of pollutants by the industries was a source of their health problems. This type of learning is typical of radical education where learning does not necessarily take place in a formal institution. People learn as they act with their experiences. Knowledge and learning thus laid in the social circumstances of everyday life.

Holford (1995) sees knowledge as not given but as a social product. This image is essentially Durkheimian in that, society is held together by fundamentally shared kinds of knowledge and beliefs.

Through their shared experiences of social and environmental injustices and the achievement of small victories in their struggle, a great sense of solidarity developed among the people and between the organisations which is a feature of radical education. They see themselves as fighting for the same cause. They are not involved as individuals who have personal responsibilities and duties to perform but as members of collectivities which share social conditions and recognise their interdependence (Thompson, 1997).

The radical tradition in adult education judges the usefulness of knowledge in relation to its contribution to assisting people experiencing oppression, inequality or exploitation. The people wanted 'really useful knowledge' that would help them to understand both the nature of their present condition and how to get out of it. In actual fact, 'really useful knowledge' was political knowledge which was used to challenge the relations of oppression and inequality from which they suffered (Thompson, 1979).

Radical education is a political strategy or means of changing the world. The people challenge a system which was determined to stifle inquiry. Since people have constraints on time and income this is not made easy but the acquisition of this really useful knowledge could be gained through collective enterprise.

To Thompson (1997), radical education based on 'really useful knowledge' implies "the development of critical thinking, the recognition of human agency, political growth and the confidence to challenge what is generally taken for granted as inevitable" (p145). This means that theory is derived from the lived experience and this is compared to similar related experiences of others to establish a 'critical mass". People can join together to develop collective forms of social action to achieve political change.

In deriving theory from experience one can also understand what the exercising of power could achieve. Power, which is present within all of us and within the relationships we make with each other, can be released to achieve liberation. If it is constrained it could result in feelings of despair or alienation. By exercising a great deal of imagination and critical thinking people can de-stabilise the authority of the inevitable. They can join with others in collective action to achieve change (Thompson, 1997).

This may all seem too idealistic, but the pursuit of social change based on conscientisation, the development of critical intelligence and the courage to stand up against authority implies a form of 'really useful knowledge.'

Although writings on all of the above concepts have contributed in trying to make sense of how learning is effected in social action, there are not many studies and certainly not in South Africa that show how people's actions involve learning and education in order to bring about change. South Africa has ample examples of people participating in struggles, for example the provision of housing in the Newlands area, the provision of anti-retroviral drugs for HIV positive citizens, compensation for victims of asbestos poisoning in the Cape, the eradication of the mine dumps in Kagiso etc. but there are no systematic studies thereof on learning and education in these struggle.

This study is important in that it shows how people act and learn to bring about change. In the South Durban area, whilst some participated spontaneously and others were coerced into participation in the struggle for clean air, they all went through a process of incidental, informal and/or non-formal learning. The Merebank/Wentworth areas were sites of the struggle as well as learning. The residents learnt in the context of their experience of pollution.

We see how social movements equipped the residents with knowledge, skills and understandings in their attempt to solve the problem of environmental degradation and the effects of pollution on their health. We see also how social movements help residents understand themselves as social beings and as such the need for interaction and collective social action.

In this chapter the theoretical basis for the study has been presented with a brief preview to the contribution of this study on how action for change involves learning and education. The following chapter locates the study within a context. Thus the history of environmental struggles and various organisations will be explored.

CHAPTER 4

THE HISTORY OF THE ENVIRONMENTAL STRUGGLE

4.1 Introduction

This chapter provides a review of the history of environmental struggles in the Merebank/Wentworth area and a history of various community based organisations culminating in the amalgamation of these organisations into one umbrella body. The intention is to provide a contextual basis for the study. Key responses of residents regarding the relation between their location, illness and pollution will be presented so as to explore the subjective meanings that people place on their experience of social inequalities.

4.2 THE HISTORY OF ENVIRONMENTAL STRUGGLES

The history of environmental struggles dates as far back as 1950 with the introduction of the Group Areas act. This Act entailed the forced removal of 'Black' (Indians, Coloureds, Africans) communities from areas like Sydenham, Cato Manor and Clairwood to the outskirts of the city centre which is referred to as the South Durban Basin. The South Durban Basin is made up of Merebank and Wentworth. These people who were affected by the Group Areas act, were strategically located here, near industries like Engen oil refinery, SAPREF and the Mondi paper manufacturing industry to help further industrial expansion. Although the highest levels of pollution in the country have been recorded in this area, the government continued to encourage this move.

South Durban is an area, like New Sarpy, a town in New Orleans, located along the Mississippi River, where because the residents are poor and black, toxic waste has been dumped unregulated. It is home to some of the worst industrial pollution committed by multinational companies and environmental damage the world over. Residents are continually plagued by respiratory and skin related illnesses because of the toxins emitted in the atmosphere (Louisiana Bucket Brigade, n.d).

It was at this stage in 1950 that the residents formed the Merebank Co-ordinating Council (MCC) which protested against these relocations and increased industrialisation of the area. This was one of the first battles waged against the government and industries by the community of Merebank. The MCC went to court and challenged the government on this issue. They won partial victory in that certain areas in Merebank were declared residential with others being zoned for industrial development (Palan, 2002). This resulted in people living a few steps from the fenceline of industries.

In mid year of 1958, the first housing scheme was built by the city council. Over 3000 houses were built and people began to occupy them in 1959. When Mondi was established in the 1960's they too provided housing for the locals that were employed.

During this time when Merebank was a fairly settled but rapidly expanding community, the Merebank Residents Association (MRA) was formed. It challenged the government on its apartheid policies and the industries on their contribution to environmental degradation. The residents felt that these environmental injustices had violated their basic rights as well as the lives and health of the people.

Wentworth, being situated adjacent to Merebank, existed as an army barracks in the 1940's and 1950's. This area was inhabited by Indian market gardeners and

informal settlements. Many social problems were experienced by the people. In about 1984 gang violence was rife. Another critical issue was the lack of housing. Des D'Sa, a resident and community worker at the time was concerned about the underpriviledged, downtrodden and oppressed. He decided to address the problem of gangsterism and overcrowding which was high on his agenda. He said that in some cases nearly fifteen people lived in a one bedroom home (interview, 12 August 2002).

Des D'Sa brought people together to work for the sake of developing the barracks. He said in order to achieve this he needed to offer sound leadership. Since 1987 the issue on the shortage of housing was addressed. It was upgraded to 2000 flats and 500 houses in the Newlands and Wentworth area. Also four parks, a community centre, a swimming pool, a football field and a library were built which was funded by the government.

Although these developments are great strides in the people's struggle for a more just society, Wentworth, being in close proximity to the oil refineries has a high incidence of respiratory and skin related illnesses which could be a contributory cause of the high rate of unemployment as many are too sick to work. The apartheid policies ensured that people of colour be deliberately situated next to the industrial area so that cheap labour could be easily accessible. Apartheid has left a scar on the environment which cannot be removed. Its effects have resulted in numerous hazards to public health and people's daily lives.

So we see that under the apartheid government, non-whites were not only subject to policies of inequality and separate development, but to conditions that proved detrimental to their health and their lifestyle in general.

There was now a need for a dramatic shift in focus in the struggle towards the late 1980's. Initially the struggle focused on political, social and economic

inequalities. Size of housing and lack of housing were core issues. Attention was now drawn to the struggle against the impact of industries on communities living a few steps away from the fence line.

4.2.1 Engen's contribution to pollution

The environmental damage caused by the Engen refinery can be traced as far back as 1954 when it was built as South Africa's first full scale refinery. In the 1960's this company was bought by Mobil Oil. In 1989 Mobil Oil sold the company to Gencor and its name was subsequently changed to Engen. In my opinion Gencor as a company was typical of the regime under which it was run as it did not respond, to this predominantly Black community, for a safe and healthy environment.

A change in name unfortunately did not result in a change in attitude as they were still not interested in the adverse effects that pollution had on the community. The following response to the community concerns is clearly indicative of this disinterest:

> "A memorandum was forwarded to the refinery. This community identified the problem area to include regular flaring, sulphur dioxide emissions and oil spills, etc, however the management responded by arguing that the pollution was windblown from other factories, flaring occurred for safety reasons and some oil spillage was beyond their control" (Mercury, March 8, 2002).

Whilst under the apartheid regime the suffering of this low-income community had been silenced. With the new Democratic South Africa this silence had been broken and Engen had to open up to community concerns and align itself with a new set of environmental policies. One of them required Engen to start consulting with the affected communities. Thus Engen sported their new motto, "We're South African - We Care".

In their effort to achieve and maintain good relations with the communities next to which they operated, Engen initiated a committee named the "Community Awareness and Emergency Response" (CAER) committee. This committee had been viewed with suspicion by the community who believed that there was no transparency with Engen and in fact believed that they had tampered with facts to make them look favourable. Engen has claimed the pollution levels have decreased considerably. The various groups, which will be discussed below, believe that this is not true and claim that the companies conducting these environmental pollution audits are in fact commissioned by the industries and as such produce reports which are in favour of the industries.

4.2.2 SAPREF's contribution to pollution

In the 1950's Shell and BP were granted permission by the then apartheid government to establish an oil refinery adjacent to black communities in south Durban. Shell and BP jointly operate the South African Petroleum Refinery (SAPREF) which is the largest in Southern Africa. The refinery presently processes over 150 000 barrels of crude oil a day (Sunday Business Report, 2002). This places local communities at risk of chemical exposure resulting from poor environmental management and weak environmental governance by the apartheid government.

Now over 40 years later the infrastructure is rapidly deteriorating, placing the local communities further at risk from exposure to unacceptable levels of pollutants from the aging plant.

At this point I would like to briefly explain some of the activities that the various organisations were involved in so as to give clarity to their role in environmental struggles and more especially on their reaction to these industries responsible for the high levels of pollution. Since a detailed study of each organisation is not my area of study reference will be made to the umbrella body, the South Durban

Community Environmental Alliance (SDCEA), which co-ordinates the efforts of the various community based orgnisations in striving for environmental justice in the South Durban Basin.

4.3 COMMUNITY ORGANISATIONS

4.3.1 THE WENTWORTH DEVELOPMENT FORUM (WDF)

The WDF was formed in 1994 through the amalgamation of the civic organisations in the area. It is a representative forum of all community-based organisations in Wentworth. The following are some areas of its involvement in community affairs:

- It facilitated workshops on skills development and acted as a conduit for the registration of part time labour required by the Engen refinery during its shutdown operation.
- The WDF also negotiated with authorities for provision of new homes for people and the conversion of rented homes to ownership homes. It also acted on behalf of residents regarding rent disputes with the Durban City Council.
- It acted on behalf of employees of Engen regarding labour disputes.
- Their main focus however was on the impact of pollution on the lives of the people.

In 1994 the WDF was invited to be part of the "Caer Committee" who claim that it is a genuine initiative to be more open and transparent with the communities in which they operate and to walk the path of sustainable co-existence. The function of the community was to be that of an environmental monitor. This committee was met with suspicion by community members, and thus negotiated

for the constituencies of this committee to be changed, allowing for more community representatives to occupy more key positions.

This opportunity to fulfill their function as a monitor arose in 1995 when "Lindane", a white solid used in the petroleum recovery process was dumped on the playing fields of Wentworth. The children who played in these grounds ingested the substance and became extremely ill. It was this incident which was the turning point in the lives of the residents in the Wentworth area. They realized and many for the first time, that they were being exposed to life threatening chemicals and something had to be done. Mrs Ward, a grandmother said,

> "My daughter died of asthma. I'm responsible for my grandson. He was four when that happened (lindane incident). A few boys carried a limp body and placed it on my lap. I spent a lot of money but he is still not right. He cannot go to school cos' he cannot control his bowel movement. He is still in nappies. My heart is broken because he cannot run around like other boys can and some of them even laugh at him. (tearful) These people are just killing us slowly. Somebody needs to do something." (interview, 26 August 2002)

This incident prompted the WDF to conduct a survey among residents on the kinds of illnesses related to pollution. The survey revealed that at least 5000 out of about 65000 people suffered with asthma. People were mobilized into action and engaged in a protest march to meet President Mandela (at that time) at Kings House, Durban to highlight the pollution crisis in the South Durban Basin. He initiated a multi stakeholder task team to address the environmental issues. This gave them recognition at the national level.

4.3.2 SETTLER'S PRIMARY ENVIRONMENTAL COMMITTEE (SPEC)

In 1999 the teachers at Settler's Primary School formed SPEC. It is believed that because of the high levels of pollution effective teaching and learning is not taking place. Being situated in a valley and surrounded by the three industries, Engen, SAPREF and Mondi Paper mill, the pollution levels are seldom in keeping with the World Health Organisation (WHO) guidelines. Parents and teachers are concerned about the high rate of absenteeism of pupils and teachers.

On days when pollution levels became particularly unbearable the staff logged it down as evidence to make the industry accountable for their actions. In doing this the refineries admitted that there was a problem and offered the school a platform to voice their concerns. Hence the formation of the Settler's Primary Air Quality Committee whose task was to monitor the pollutants that the staff and learners were exposed to.

The following are some ways in which SPEC, in particular is involved in the environmental interests of learners and the community at large;

- It represents the school at monitoring committee meetings.
- It informs parents and children about pollution.
- It registers complaints of air pollution with industries and the City Health Department.
- It secured an epidemiological study undertaken jointly by the University of Natal Medical School and the University of Michigan to determine the impact of environmental pollution on the lung capacity of teachers and learners at the school (Mercury, 8 March 2002).

It was found that out of a total of 859 pupils in the school, 40% of the children were reported to have chest-related problems which ranged from wheezing,

chest pains, nausea, increased use of inhalers etc. (APPENDIX C). Because of the high rate of wheezing, locals have dubbed the area 'the asthmatic belt'.

When high pollution levels or toxic emissions were detected, complaints were lodged by the school's Pollution Action Committee with the following authorities in the hope that they would take immediate action to stop the emissions and hence allow normal schooling to continue:

- The Durban Metro Chief Pollution Officer
- The Metro City Health Department- for assistance to treat the children
- The Southern Sewage Works
- Engen Refinery
- SAPREF Refinery
- Mondi paper manufacturing industry

According to SPEC reports to the authorities have been ineffective. At most times none of the authorities responded to calls and when they did, it was many hours after the event. At most times no medical assistance was given to the school. The community felt that the industries should take responsibility for their actions and not expect volunteers to continue rendering free services. They saw the industries as having a moral obligation to the community to pay for the following requests:

1) An alarm placed strategically in the school premises with specific tones to warn children in school and the immediate vicinity that they should get inside and close doors and windows to protect them from the toxic pollutants.

2) An emergency medical facility in school i.e. A fully air conditioned room with filtration systems to eliminate toxins entering the room via ducts should be strategically placed near the entrance of the school for easy evacuation of sick children.

3) Emergency personnel – 2 or 3 teachers and members of the community to attend paramedic training available at the Provincial Emergency Services College- This would be a practical way to empower communities.

4) Basic Requirements and Equipment:

- emergency nebulising kits and medicines
- gas masks for those who have increased bronchial hyper-reactivity to toxins in the air
- blood pressure machines and stethoscopes
- a wheelchair
- 2 oxygen cylinders (Dr. Seetharam,2000)

This community based Emergency Medical Plan which was sent to the industries was rejected outright. For SPEC, reaching this deadlock required a new strategy to have their demands met. The residents then joined the various organisations in their respective areas and in that year, 1997, all the organisations were unified under the umbrella body SDCEA. This body will be discussed later in the study.

The above, described SPEC'S involvement in the struggle for clean air. Below is a description of the evolution of the struggle of the community at large for environmental justice since 1994.

4.3.2.1 Community response to pollution

The community members were rallying for a legal agreement between Engen and themselves concerning pollution reduction. The demands were laid out in what was called the "Good Neighbour Agreement" that proposed that Engen:

- Released information
- Reduced emissions
- implement affirmative action
- Use more stringent safety precautions
- Pay more attention to energy and environmental conservation

Engen did not agree to the demands of this agreement and in retaliation the residents demonstrated at the gates of the refinery. However all was not in vain because on 28th March 1995 a meeting with the President, Ministers, Engen management and community leaders was held. In May the same year, Engen agreed to negotiate a Good Neighbour Agreement. As expected this agreement was broken when Engen said it could not or rather would not reduce Sulphur dioxide emissions. Thus negotiations came to a deadlock and tension increased.

To further decrease its credibility, in December 1995 Engen and the City Medical Officer of Health held a meeting, excluding community representatives. They were angry and responded to this by forming a blockade to the entrance of the refinery.

On the 27th February 1996 there was a more intense appeal for government intervention. A meeting between the disputing parties and government officials was held. Engen said that it was not relenting on its SO2 emissions, as it was not in violation of any law (the laws of 1965). The community on the other hand argued that the new democratic government was bound by the constitution to protect its people and environment from any hazards. At the conclusion of the

meeting, the community proposed that the pollution level be reduced. Engen retaliated that only if national pollution levels were lowered would it reduce its emissions and offered a further proposal for an independent panel to find a solution to this dispute. This proposal was held in suspicion by the community as they believe that technical staff are only human and may succumb to the bribe of large multinationals.

The community seemed despondent at this stage as negotiations were reaching a deadlock because Engen was not going to relent to the requests of the community. However, they knew that to give up at this stage would be foolish, as the industries would only continue to violate their rights. They realized that although each group served to conscientise people on the impact of pollution on their lives as well as galvanise public support, they needed to join together to make this 'giant' clean up its act. Thus they called for unity among all those lobbying against Engen.

On 16th November 1996 community members made a decision to unite against industries like Engen and exert some kind of meaningful pressure to bring about change. This came into effect when on the 8th of February 1997, eight community based organisations and two Non Government Organisations amalgamated to form what is currently known as the South Durban Community and Environmental Alliance (SDCEA) (interview, 5 Sept. 2001).

4.3.3 THE SOUTH DURBAN COMMUNITY AND ENVIRONMENTAL ALLIANCE (SDCEA)

SDCEA served to unify the various organisations. It was the power base which gave the people legitimate representation to raise their concerns. It presents a strong unified community voice and has engaged in a number of environmental justice campaigns against local industries. Its strength lies in the fact that it stresses strong community involvement.

Des D'Sa the chairperson of the SDCEA explained, "the reason for SDCEA being such a strong organisation is not only because of its organisational structure which consists of affiliate organisations from the Bluff, Wentworth, Isipingo, Merebank, Umlazi and Clairwood, and being governed by a constitution, but more importantly its emphasis on community involvement" (interview, 12 August 2002).

The following are some of the attempts of the SDCEA in working towards a change in the environment:

- its attempts at popularizing the impact of environmental degradation on people in the South Durban Basin by means of public meetings, workshops, school visits and a good media profile.
- it has been instrumental in organising mass public meetings to inform the people on the developments in deliberations with authorities
- it has been instrumental in mobilising the community by organising protest marches
- it has conducted toxic tours for environmentalists to highlight the hazards of pollution in the area
- it presents the concerns and requests of the community at meetings with industries and authorities (Palan, 2002).

This Alliance constantly put pressure on Engen. This came to a boiling point on the 25th of March 1998 when Engen announced that it would reduce its pollution permit levels by sixty five percent (65%) over five years starting from 1999. Coupled with this agreement was the fact that the community could access their own technical people to monitor the reductions with Engen accepting the financial costing for this.

The SDCEA enlisted the help of an American organisation known as Communities for a Better Environment (CBE) as well as using the Bucket Brigade programme. The rewards were twofold; the primary reward being that they gained technical expertise to back up their claims and the secondary reward being that they gained media coverage which was a good medium under which to facilitate.

4.4 True Life Experiences

Having knowledge of the environmental problems and the history of various organisations merely sets the stage in understanding why and how residents were involved in the struggle. However, just as important is an understanding of how their socio-economic status influences their participation in the struggle for a more just society. My interviews were conducted with the predominantly working class residents living in the Dinapur Road flats which is in the vicinity of the Settler's Primary School area. This area suffers the greatest impact of air pollution because it is situated in a valley and is surrounded by the three major industries responsible for the high levels of pollutants. This particular group of people is the poorest of the poor.

The majority of the people live below the breadline. Often there is only one person employed. Many homes have no other source of income except the state grant given to the elderly. Women stay at home to take care of the ailing and elderly. Much of the income is used for medical bills and food is bought with what is left over. To sustain them, the men fish at the already polluted Isipingo beach.

This is the story of Meena, a woman who was interviewed on the12th of August 2002.

> "I'm a mother of three teenage daughters. We have no income what so ever. My husband catches carrentine at the beach. The fish has an oily smell and is black inside. It tastes horrible but we eat it cos' there is no food. Most nights we have bread with water. My children don't go to school sometimes cos' they are too hungry to concentrate. We have no lights for the past four years and even if we get sick we don't go to the doctor. We live like animals ....pollution, filth, drug addicts everywhere."

This is a typical set up of many homes in that area. Stories like these and many more are bound to humble you and tug at your conscience to do something. I found myself becoming so emotionally involved with respondents that I felt guilty at times about eating and having electricity. Packets of groceries were carted to people like Meena's homes. Sweets were given to open-mouthed children as I drove in. Both adults and children looked at you with expectations as if you were their 'saviour'. I realized that if I were to achieve my purpose in being there, I had to distance myself.

Because they lacked basic needs like food and proper living conditions, the people were intent on focusing on those issues. When questioned on issues related to the impact of pollution on their health they reverted to how difficult it was to make ends meet and the poor state they lived in. When it rains they say that the 'apron cracks' on the wall lets in the water. Water flows in through the only entrance door they have. Mrs Pillay explained the roots of her discontentment about the conditions in the Dinapur road flats,

> " We have only one plug point. We have cords running all over the place. In case of fire we will be cooked alive because there is only one entrance to get out. Even the fire extinguisher is old and rusty. And you know in our custom we have to bring the dead inside the house...we can't even do that because the coffin will not go up the narrow stairs. When we are alive we are treated like dogs at least when we die we should die with some dignity" (interview,14 August 2002).

By conducting these interviews in their homes one has a holistic picture of their true-life experiences. It is quite common to see a cockroach climb up a wall or even up your leg. Mrs Panday, not her real name, said, "I'm sorry but we don't have money to buy 'doom'... the manholes are invested (infested) with cockroaches and the City Council is doing nothing about it" (interview, 14 August 2002).

In some homes that do not have electricity, the interviewees would rush to get a candle close to you so you could see what you were writing. It is so blatant that they are trying to drive a point home, as if to say, 'This is how it is on this side of the world'. So as not to lose the focus of my study I had tried to keep somewhat to my general plan of inquiry to achieve my interview objectives. I probed into their illnesses, about living in that area and whether they saw a relation to pollution.

The poor state of health and sanitation and a lack of basic services such as electricity has exacerbated the level of air pollution. Thus the pollution issue must be seen in the context of the community's general living conditions. However, it is important to note that the residents are aware of the link between poor housing, poverty and poor health due to pollution. In this context, fighting for survival is the main priority and pollution appears to be just one of many hazards.

There seems to be no doubt in the minds of the people that there is a direct relation between the illnesses endured by the people and pollution. The following are some responses of people during interviews and mass meetings as to what they believe is the cause of their illness. Their identities have been changed at their request for fear of being victimised by the industries in which they or their families are employed.

Mrs Pearson says that her three year old son Brandon does not venture far without his asthma pump. She said,

> "Every month I take Brandon to Addington Hospital (public hospital) where he is treated for bronchial pneumonia. He has been taking so many antibiotics that his teeth have decayed and his weight is never the same with each attack. I know when my child will have an attack. When Engen lets out this black smoke then his attacks are severe (interview, 12 August 2002).

26 year old David from Wentworth lives with his 55 year-old mother. He said that he was troubled about the nauseating smells and the pollution that affect her. He said,

> "She goes to the hospital nearly 10 times a year. This is a huge slice off my budget because I do not earn very well. I can't think of marriage. Where will I have the money to support a wife".

He feels that the industries should at least subsidize the hospital bills. He says,

> "On nights when the smell is very strong, I wake up the following morning with a severe headache. Sometimes when the pollution is so high, we have difficulty opening our windows. We dread wiping the black soot off the windows because our skin begins to itch" (interview, 19 August 2002).

An emotional Mrs Harilall spoke out at a public meeting held by the SDCEA on the 24th of August 2002. She explained,

> "Since 10 month old baby my son had a kidney problem. He is in and out of hospital. He needed a kidney. I donated him one but he is still not fine. The doctors said I must move from here because he is only going to get worse. Where can I go? I don't have money. He keeps telling me 'I wish I could play soccer with the other boys'. I tell him 'If you get better then you can go play soccer.' But he is always sick. I have nobody. He is my life and Engen is taking it away from me."

These and many more stories reveal the hopelessness that people feel in having their situation changed. However they do realize that on a personal capacity they are unable to fight the "giant" and are therefore enlisting the help of community based organisations to bring about some form of change, which explains the presence of Mrs Harilall at the mass meeting.

CHAPTER FIVE

FINDINGS: HOW THEY ACQUIRED USEFUL KNOWLEDGE

5.1 Introduction

This chapter looks at how action relates to social learning with reference to previously elicited literature and how people acquire 'Really useful knowledge' in struggling for social justice. Here I will also look at what and how the residents learnt in their struggle against environmental injustices.

5.2 HOW DID THEY ACQUIRE USEFUL KNOWLEDGE?

5.2.1 Neighbours

There were many ways in which the residents realized that their problems were not personal but that others also shared a similar fate. Some learnt this when speaking to their neighbours while hanging up washing in a communal area. While waiting at the doctor's waiting rooms people chatted casually about their children's or family illnesses. They realized that there seemed to be a pattern of illness among their children and elders that ranged from redness in eyes, itchy skin, asthma and cancer of the lungs and tumors in the brain.

5.2.2 The Media

Others read the pamphlets which were placed in their post boxes informing them of mass public meetings. People who were experiencing some form of ailment were urged to attend. (APPENDICE D) The local newspaper has done a good job of informing residents of the effects of pollution on their health and the ceaseless spills and accidents. Explicit pictures are shown of the flaring and thick clouds hanging over the basin.

5.2.3 Educational actions by organisations

Many residents out of curiosity had made their way to the meetings and were surprised at how many people shared similar or worse experiences than theirs. However they were pleased to hear that there are people and organisations that are willing to take up their cause together with their participation in the struggle.

To facilitate learning, people who are knowledgeable on the effects of pollution on health were invited to speak at meetings. Residents attending these meetings have learnt that pollution appears to have long term effects on children's lungs and these toxic emissions result in respiratory diseases and other forms of cancer.

Numerous medical and research centres have been called in to undertake studies pertaining to the effects of the refinery's pollution on community members the results of which will be discussed under the heading 'learnt about statistics'.

It is in and through the resident's action and participation in mass protests, that they acquired new and useful knowledge about industries, how to take samples of pollution, scientific knowledge about pollution and its effects, about organising and strategising for collective action etc. The following is a description of some of the different kinds of things that the people in the South Durban basin learnt.

5.3 WHAT DID THEY LEARN?

5.3.1 Learnt that there was a need to learn

The community realized that in order to bring about change, they needed to acquire expertise, build new forms of organisations and take action. This type of learning is significant and empowering. They had little or no faith that experts engaged by the authority would assist them. Instead, they would have to build their own expertise and learn to act with authority.

In 1994 the people had voted into power a government which undertook to deal radically with the inequalities and injustices of the past. Ironically they had been guaranteed a right to a safe and healthy environment in the South African Constitution. They promised to 'free' people so that they could make money in any way they liked, provided it was legal and they could voice whatever they thought. However many people are still not free to break out of the cycle of poverty, or to make choices about where and how they would like to live. (Hope & Timmel, 1996)

They are also facing in many ways an even greater crisis now. This is, the government's failure to effectively regulate and control the activities of environmentally hazardous industries. The laws regarding pollution in South Africa are not very stringent and therefore cannot be of any value in protecting the affected communities from exposure. Thus the residents experiencing environmental degradation have learnt to lessen their dependence on government intervention to protect their interests but rather to rely on themselves to effect change.

The community has questioned the integrity of the state that refused to prosecute or hold the refinery accountable for its negligence. One member of the community demanded to know,

> "Why the owner of a fishing tug should be fined ten thousand rands for polluting Durban harbour with a few thousand litres of diesel, while the spillage of a million litres of petrol in a densely populated residential area resulted in no punitive action against a company which refined fuel on behalf of the Shell and BP multinational groups." (mass meeting, 25 August 2001)

Comment made at a mass meeting by a London-based environment organisation, Friends of the Earth International (FOEI), was that "corporations are leaving a toxic legacy in the Southern Hemisphere without shouldering any liability for damage caused because they are powerful enough to ensure that the government does not regulate their operations too heavily." (mass meeting, 25 August 2001)

It is clear that there are inconsistencies in government practices and people have no faith in government intervention for environmental justice. Thus residents saw the need to learn how to collect evidence against industries and to acquire knowledge on how to assess potential risk to their lives.

To do this, there was a need to gather accurate information on pollution and its effects on their environment. The more informed they were, the more threatening they became to the industries. They saw that it was mainly the people of colour from a low socio-economic background who were exposed to the threats of the industries. This is precisely Lave's theory of 'situated learning' which states that, "learning normally occurs as a function of the activity, context and culture in which it occurs" (Lave, 1999, p24).

5.3.2 Learnt about statistics

The community had learnt that the rate of asthma at Settler's Primary School, located in the area is among the highest in the world and the complaints were strongly related to Sulphur Dioxide pollution levels. When the smell is particularly strong the schools absentee rate is as high as 80 percent. In my opinion poor attendance at school has resulted in poor performance and subsequently less chance of university entrants and a greater chance of placement in lowly paid jobs. Hence the vicious cycle of poverty is maintained.

Residents feel more confident in their struggle when they realize that experts on the pollution issue have conducted studies in the area. This makes their struggle more authentic. In a recent Ecoserve report it was stated that Sulphur Dioxide pollution in Merebank exceeded World Health Organisation (WHO) guidelines on 124 occasions between November 1, 2000 and October 31, 2001. It seemed to emanate from Engen which is 700m away from the school (Natal Mercury 8th March 2002).

When the Natal Medical School and the Natal Mercury conducted a study, they found that there was definitely a link between pollution by refineries and poor health of residents. These studies have rendered the following results:

The Natal Medical School found that the children of South Durban were four times more likely to suffer from chest complaints than in any other Durban suburb. The Natal Mercury conducted a door to door survey of this community and found that childhood leukemia levels in the South Durban area were 24% higher than the national average, many factory workers have died of cancer. A list of 34 senior refinery employees had died of various forms of cancer before the age of 40. Most residents complained of severe chest pains and an inability to play sports. This had raised concerns from local communities over their health and quality of life. (mass meeting, May, 2000)

Bobby Peek, the chairman of Groundwork, which is the community action group (Bucket Brigade), stated that three of his friends who used to play rugby with him died of cancer below the age of 34. His mother died of cancer and so did his niece at the age of twelve (mass meeting, May, 2000).

5.3.3 Political learning

There is also another dimension of learning in the campaign which relates to what Freire called 'conscientisation'. The residents in the South Durban area moved from assuming that pollution and its related effects on health was unavoidable, to learning that its irradication was something to be struggled for.

They learnt that action is necessary and possible for change to occur (Foley, 1999). Mr Moodley, the 68 year old man believes that, "We have to fight our own battles. The big shots – managers of Engen don't live here, so they don't care" (interview, 15 August 2002).

Attendance at mass meetings began to transform the people's consciousness and enabled them to shrug off the feelings of negativity. They moved from a state of believing that they were just a small, working class community with no significant abilities and skills who could not take on the big industrial 'giant' to becoming more self confident and more critical. In the sense that Paulo Freire would say, "They became more aware of the kind of fatalism they had, and what they could do by their own initiatives and by their own...gifts and skills" (Foley, 1999, p127).

The community has learnt to have confidence to challenge what is generally taken for granted as being inevitable. Des D'Sa is one example of such a person. He moved to Wentworth under the forced resettlement of Coloured people. Initially, being a textile worker he saw the industries, especially the refineries as serving two important functions namely, providing fuel, which is a vital commodity for the country and also providing employment, which was greatly needed in this impoverished environment. He felt at that stage that it was inevitable that they would pollute the environment and closure of this industry would have a ripple effect on the residents. This will mean a loss of employment for many workers who depended on the income to sustain them.

It was only when he had become involved in the housing issues in 1884, that he noticed that there were other social and environmental problems. He began to see pollution in residential areas as an infringement on human rights. "They don't respect the community around them. In fact, they put profits before the health of the people", he said.

5.3.4 Learnt scientific literacy and the relationship of environment and health

Many residents had painstakingly learnt how some of the gasses were formed and their effects on health. One such person was Mr Moodley a 68 year old man. When speaking to him I noticed that he was well informed about the scientific and technical aspects of pollutants and spoke of it with ease. He said that he does not neglect being present at every meeting where he writes copious notes and has learnt a great deal. He says,

> "Engen uses technical terms. They think we won't understand. We must take the time to learn these things. Only if you know what you are talking about, you can fight." (interview, 15 August 2002)

He is a man greatly respected by younger activists because of his knowledge on the issue and his dedication and commitment to the struggle. He has proven that learning and active involvement cannot be restricted by age.

Mr Moodley, like many others, have learnt that Sulphur Dioxide (SO_2) is an invisible gas which is formed when oil and coal is burned. In higher concentrations it has a sharp acrid taste. It is also a component of acid rain. The community learnt that prolonged exposure to relatively small quantities of SO_2 can cause increased risk of bronchitis and emphysema, nose bleeds, numerous respiratory problems, disruption of the thyroid gland and in women menstrual disorders. Even short-term exposure results in reduced lung function accompanied by such symptoms as wheezing, chest tightness or shortness of breath in asthmatic children and adults.

The community also learnt that Oxides of Nitrogen (NO_2 and NO_3) are used in more concentrated forms by industry. These noxious gases are used as a catalyst and oxidizing agent. They are produced from the burning of coal, oil or gas which in higher concentrations causes respiratory damage, especially in children. During my interviews with residents, I noticed that the presence of inhalers and nebulizers in each home was common. In effect breathing air

containing these chemicals is like breathing diluted quantities of poison gas, acid and bleach.

To some residents acquiring this scientific knowledge was not important. What was important was identifying which industries were responsible for polluting the environment, how these emissions are detrimental to the health of the community and how to make them accountable for their actions.

> "I can see, I can smell and I know that it is making my grandchildren sick. What more do I need to know? My daughter in law has suffered morning sickness right through nine months of pregnancy. It's the smoke and smell of these gases that caused this", said Mrs Pillay. (interview, 14 August 2002)

5.3.5 Learnt that industries withhold vital information

In March 2001 thousands of residents in the South Durban area were exposed to a life threatening gas when a tanker in the Island View complex erupted. The residents later learnt via the media (Southlands Sun the local newspaper) that it was Tetra-ethyl lead (TEL) which is highly toxic and acts on the central nervous system. This highly toxic substance enters the human body by absorption through the skin and by inhalation (Leader, 2001).

Although the City Health Department had been called in, the community received no explanation from them or the industry on the type of gas or extent of the damage. The community felt that it was a deliberate attempt on the part of the industry and department to keep them in the dark. The industries often speak of being transparent and working with the community but the people say that it is clear why they wanted this scientific information kept from them. This incident was clearly negligence on the part of the refinery and the information on the effects of the chemical on humans would have been met with an outcry by the residents.

5.3.6 Learnt to collect samples of pollution

The residents in the South Durban area, under the tutelage of local environmental watchdog groups and American community activist Denny Larson, learnt how to collect samples of air pollution in a monitoring device pioneered by Erin Brockovich, the American environmental worker who campaigns internationally against industrial pollution. (APPENDIX E)

The members in the various community groups became frustrated by the lack of official records on air pollution and decided to collect their own evidence. No longer do they rely on polluters to report their own 'sins'. The original air monitoring equipment is too expensive so they hired a consultant to make a cheap and simple sampling device. The residents learnt that polluted air could be trapped in a laboratory bag housed in a bucket. This system is approved by the USA Environmental Protection Agency (EPA). (Details of the Bucket Brigade will be dealt with under the heading, 'How to make them accountable?')

In May 2000 the residents who participated in the 'Bucket Brigade' programme acted much like sniffer dogs and collected scientific evidence on air pollution from neighbouring industries. The air samples were couriered to a Los Angeles air pollution laboratory which is also EPA approved. The sample highlighted levels of benzene at "30 part per billion (ppb) in the South Durban area. These levels are 8 times higher than the USA Ambient Air standard" (Community Talk, 2000).

The residents learnt that the benzene concentration in this area is the highest in the world. The Agency for Toxic Substances and Disease Registry (ATSDR) in the USA adopts a guideline of 4 ppb, the California guidelines are 18.8 ppb and England adopts a 5 ppb annual average standard (Community Talk, 2000). They have also learnt that health effects to the exposure of Benzene are varied. It is a confirmed carcinogen which impairs development and impacts upon the nervous,

immune and cardiovascular systems. Other chemicals picked up in the samples that were taken by the communities were methylene chloride, carbon di-sulphide, 2-butanone, toulene, and ethylbenzene, to name a few.

Bobby Peek, of Groundwork is concerned that with all these chemicals identified in the community air sample, "communities are faced with a danger of a toxic soup that is much more potent than being exposed to just one chemical." (Community Talk, 2000)

The community has proven that the air sampling process in attaining information on toxic pollutants is not a difficult task and now there is no excuse for government not to act. They have done their bit to show the unacceptable levels of hazardous chemicals which had been kept a secret by industries for so long.

In cases where pollution incidents cannot be effectively sampled with a bucket, for example flaring, the residents are told to photograph or video tape the pollution incident, including the time and date. This visual proof is powerful evidence against the polluters and is additional proof of the residents' complaints. By the community controlling the data proving that there is a pollution problem, the industries have no way of proving otherwise and are being forced to 'clean up their act'.

5.3.7 Learnt that everyone has a role to play in the struggle

Although it seems to be a fact that for significant change to take place, people need to engage in collective action, we should not lose sight of the contributions that individuals make to the group in the learning process. Kilgore (1999) mentions some of the individual components that are essential for collective learning. These are "identity, conciousness, sense of agency, sense of worthiness and sense of connectedness" (Kilgore,1999, p196).

Des D' Sa decide to do something about his situation. He saw the need for collective action and thus formed the Wentworth Development Forum (WDF). He does not seem intimidated by the number of academic qualifications that authorities have and is unafraid to confront the 'industrial giants'. He says that he puts his views across on his level. He has read widely, conversed with his colleagues and investigated the facts about pollution. In this way he has gained expertise in the field. He is a highly charismatic orator and because of his dedication, expertise and commitment there has been collective agreement in conferring authority to him. The community believe that since he, himself has emerged from suffering and oppression he is most capable of leading them to victory. There was no struggle for power to dominate and the people have accepted him as the chairperson of SDCEA.

Many people in the South Durban basin see themselves as having a role to play in the struggle to bring about environmental justice. This could be in the form of signing petitions (APPENDICE F), handing out pamphlets, being present at mass public meetings and voicing their dissatisfaction with the industries, engaging in protest marches or collecting samples as evidence of the high levels of pollution.

Mike, an unemployed resident in the area said,

> "We need to march and rock the gates of Engen and SAPREF to make things happen here. Des can't do it on his own. We need to get together as a team and show them that we are not.... afraid of them". (interview, 15th August 2002)

Although some of them are illiterate they see that they have something to offer that is, their presence during mass action, as they believe that there is strength in numbers.

Many residents have an affiliation to one organisation or the other (WDF, MEAC, SPEC and others) and their self-identification enables them to build on relationships within the group and encourages social interaction which is a key aspect of the learning process. It is here that people become aware of themselves as autonomous actors. Kilgore says that this "sense of connectedness adds a social vision to our other senses of self. It involves our empathic capabilities and the affective reasons for why we choose to coordinate our individual thoughts into a group process." (Kilgore, 1999, p197)

5.3.8 Learnt how to act

The residents in the Merebank/Wentworth area have pledged not to tolerate the high levels of pollution any longer. Some had decided to take it upon themselves to confront Engen on their plight. Mr Dass who has lived in the area for thirty years said that his complaints had fallen on deaf ears and he has reached a stage when he thinks that it is futile to complain because, "When I told them about the soot on my car, they told me to send my car to an autovalet" (interview, 5th August 2002).

People like Mr Dass now know that their problems can't be solved on a personal level because their problems are social, collective ones, which have to be worked on by an organised group. Thus the community organisations have moved from the stage of merely raising awareness of pollution hazards to mobilizing for action against those responsible for polluting the environment.

Besides sharing a common locality, residents shared a similar experience that is, direct exposure to pollutants with detrimental effects on their health. Just by sharing their experiences they realized that it was not a unique problem and they needed to deal with it together. They have been drawn together by a sense of collective identity and increased solidarity. These two components of collective development were displayed when the people put pressure on industries to reduce the emissions of sulphur dioxide in 1999.

5.3.9 Learnt about risk management assessment

Because of the pressure by the community, SASOL refinery then proposed the installation of a new natural gas pipeline which would reduce the emissions in the South Durban area by 50% to 60%.

On 5 March 2001, Mr Paul Skivington, an expert on risk management in Johannesburg was called in to explain the risks involved in the proposed use of natural gas pipelines. He tried to assure the community that many good environmental practices result in production benefits for the industry. He said that the risk assessment done on route 3 was according to well-recognised international standards. He also mentioned that the American Society of Mechanical Engineers standard has been used in designing the pipeline itself.

As was customary, the residents were called to a meeting on 10 march 2001 to make an input regarding the issue on the route the pipelines were to take. The leaders were not prepared to take the brunt if the wrong decision was made because they know all too well that the pipes running through this area were over forty years old. A year before there had been one major explosion which resulted in one person being killed. Therefore within the organisation itself there were negotiations and efforts to reach an agreement regarding the goals to be achieved and the means to be mobilised.

After listening to many of the options being presented at the mass community meeting, the residents examined this change critically and strongly objected to the route the gas pipeline was to take. It was to run alongside the residential area.

The community had the foresight to see that inspection and maintenance of the pipelines was just as important but was not considered or mentioned. They saw this move as replacing one risk with another. In other words although the

pollution levels may be reduced the people learnt that there is a further risk of the people being exposed to danger in case of the pipe exploding as it was a high pressure pipeline; 1500 bars.

In the worst case situation, Engen's consultants on risk assessment stated that if the pipe had to explode and there was thermo-radiation, anybody within a hundred metres would die. One could hear in the audience the fear and concern of the people about the separation distance between the houses and pipes (mass meeting 10 March 2001).

Another problem related to the aging pipelines is the number of leaks that the residents had to contend with. In the past, refineries were reluctant to divulge reports on pipeline safety inspections to the community, as it was believed that the information was of an extreme technical nature and would not be understood by them and there was the risk of creating a major uproar and confusion among community members due to a lack of understanding of some of the data. Little did the industries realize that the million litre spillage of petrol in Tara Road, in 2001, would raise more questions in the minds of the residents and they were more determined to find out more details on the safety of Durban's fuel pipelines which date back forty to fifty years.

This petrol leak in 2001 went unnoticed by SAPREF (Shell and BP) until Wentworth residents complained about the stench of petrol fumes in their homes. The refinery was inundated with calls from the residents even in the early parts of the morning. A safety inspection then revealed that there were more than two hundred and sixty weak spots, mostly in residential areas. It seems that explosions, chemical spills and accidents are a hallmark of the refinery's operation. The spokesperson for the SDCEA, Des D'Sa, demanded that the entire pipeline network be replaced. Instead SAPREF is presently frantically patching up its rusty underground pipelines.

They (SAPREF) assured the community that the spillage was being attended to and would not pose any threat to those living in the area. On speaking to Denny Larson, the co-ordinator of the US-based Refinery Reform Campaign I was told that a leak of such magnitude in the US would have resulted in immediate prosecution and a clean-up campaign of a pipeline leak would require the refinery to remove all the contaminated soil and replace it. They would have had to replace all its pipelines and not patch up the pipelines as SAPREF is doing (interview, 25, August, 2002). People have learnt how to assess potential risk to their lives and livelihoods. They have learnt that the refinery was taking the easy way out and it was not possible to suck up all the liquid in the manner in which SAPREF was doing.

5.3.10 Learnt about lobbying and advocacy

The community gained knowledge in lobbying and advocacy. They saw the need for accurate knowledge, after which they engaged in the process of negotiations with SAPREF on the route of the installation of the gas pipeline. The route through the dunes was too costly for SAPREF and the route alongside the residential area was too dangerous for the community. The residents collectively decided on the route which goes along the canal into the Southern Wastewater Treatment Works and then into the refinery.

SAPREF did not relent to the decision and thus the residents began signing petitions, picketing and demonstrating outside the gates of SAPREF. When this had little effect they learnt about the need to vary tactics through reflectivity. The people began to reflect and learn from their failures and victories and analyse their actions. Wildemeersch sees reflectivity as being "basic to action and learning and hence to social learning." (Wildermeersch, 1998, p225) Learning is the result of standing back from the action and considering to what extent the strategies or actions have contributed to the outcome.

This led to more drastic forms of protests like filing law suits. The residents legally objected to the pipes running alongside their homes and subsequently this predominantly working class neighbourhood, had won that round of the legal battle when the Supreme Court granted the Merebank Environmental Action Committee (MEAC) an interdict against the Department of Agriculture and Environmental affairs and SASOL in preventing a methane gas pipeline taking this route. (APPENDIX G)

This victory is a clear indication that the people who have been drawn together by a common issue, have the ability to organise and mobilise against the industries that propose changes which may be detrimental to the lives and/or health of people. Victory in this regard has resulted in an increase in confidence in themselves as "collective change agents." (Kilgore, 1999, p197) This strengthened their solidarity within the organisation because they see that it is possible to challenge and win against a 'giant' like Engen.

When people learnt how to take samples, they made this information (samples with high pollution levels, photo evidence of pollution or detailed log book accounts) available to the agencies who took the necessary actions. When the results show high levels of chemicals it is widely publicized via a special web site. SDCEA makes this possible as they have the means. The organisations hold regular meetings within the community to communicate the results of the sample data and also to provide a forum for community input and feedback.

Sometimes the media is alerted and articles are published in the community newspaper to let the general public know what is going on. The leaders feel that to achieve success it is important to get the word out to as many people as possible. They believe that if the media is used effectively, it can be a key factor in forcing the industries to meet community demands. After all, "the media responds well to controversy, human interest stories and classic struggles, such as 'David versus Goliath'", said Denny Larson. He encourages the community to

be persistent in their endeavours and never give up as it takes more than a few samples and news stories to win campaigns (interview, 25 August, 2002).

5.3.11 Learnt to be critical of industries intentions

Another issue at present is Engen's plans to increase capacity of crude oil production by twenty percent from 125 000 barrels a day to 150 000 barrels a day. The community was told that modifications to increase production would include R45 million on new technology to reduce the emission of particulates or dust. The community sees this as a ploy to "hoodwink" the people as they believe that an increase in production means an increase in the levels of pollution. The SDCEA believe that "a reduction in emissions a barrel (with new equipment) does not in this case imply an overall decrease in emission levels of 150 000 barrels a day" (Sunday Business Report, 25 August 2002).

The community is critical of any proposal for improvement by Engen as they have been caught out to promise much and deliver little or nothing. The residents threatened to call for the refinery's relocation should their demands for a clean environment not be met. They also demanded that Engen withdraw its application for increased production and that they use best international technology and practice.

5.4 Accountability - a difficult task

The residents realize that there are many issues standing in the way of making industries accountable for their actions. Firstly, the refineries being major investors and suppliers of fuel are using their economic muscle to avoid regulatory sanctions. Society as a whole derives the benefits of the products of these industries but communities living in the South Durban Basin suffer the fate of breathing in these health threatening chemicals daily. Residents say that, "by funding a few community projects they think we will forget about the pollution.

How can we forget about the pollution when it is making our brothers, sisters, parents and children sick?" (mass meeting, 24 August 2002)

Secondly, the community is aware that part of the problem in increased levels of pollution is that there are currently no legally binding air pollution regulations or enforcement body in the country such as the US Environmental Protection Agency (EPA) and relies on self-regulation of industry. There are only non-binding 'guidelines'.

Thirdly, Des D' Sa, the spokesperson for SDCEA, says that another reason for the difficulty in pinning blame on the industries for the high rate of pollution related illnesses is that they employ much temporary labour. Often it is difficult to trace the whereabouts of these temporary workers as they are employed for a few weeks or months. The ethics involved in employing temporary workers is that if they experience any respiratory or lung related illness, the industries are absolved of any blame. Des believes that "there are many ways to kill a cat", and the residents are working on ways to make industries accountable for their selfish actions.

5.5 The role of the GCM in educating people and building really useful knowledge

Since there are no given answers to the environmental problems, they have to be worked out during the process of the struggle. The knowledge needed for the solution has to be created (Horton, 1990). Presently these industrial neighbours (Merebank and Wentworth) have pooled in global support. This networking/solidarity with other organisations does more than just build strength. The Global Community Monitor (GCM) is a global environmental justice and human rights organisation which is empowering this low income community of colour to fight against environmental injustices and to hold industries accountable

for their environmental violations. They do this by educating the people in the struggle and helping them build really useful knowledge.

The GCM are instrumental in giving the residents the tools and training to document toxic exposure which will help them verify the connection with health issues. This has encouraged the local residents to step into the enforcement gap and begin testing their own air using an inexpensive bucket air sampling device that was developed by environmentalists in the United States. Previous to this the only way the residents could monitor the high levels of pollution was through their lungs. On days when the levels of pollution were high the sick experienced an increased discomfort.

What follows is a detailed description of how the GCM plan to empower the residents and popularise the issue of pollution. The challenge is to provide learning that is really relevant and to facilitate the generation of knowledge that is really useful to all residents.

5.5.1 The aims of GCM for the South Durban Basin

- To assist the community in monitoring the environment.
- To assist them in their communication strategies
- To develop leadership and build the capacity of grassroots
- To train communities on effective research strategies (Larson, 2002)

The GCM believe that through effective community monitoring and follow up action, these industrial neighbours (Merebank and Wentworth) can be successful at achieving advances in enforcement and emission reductions. Amongst their many achievements is the more recent one, where they have exposed a major pollution problem in Manila, Phillipines, through sponsoring and training the residents to document the issue. By building a specialized tool kit geared towards effective "hands-on" monitoring devices such as the "bucket" device, the

GCM assists industrial neighbours in winning their struggle for environmental justice.

The "Bucket" is the five gallon plastic kind fitted with two valves, one of which has a special sample bag attached to capture gases. After sampling, the bag is closed off and couriered to an air pollution laboratory in Los Angeles which is equipped with computerized gas chromatograph mass spectrometer (gcms). (South Africa does not have any government-approved air testing facilities.) This computerised system compares the chemical "fingerprints" of gases in the sample bag to known toxic chemical compounds. When the system detects a chemical such as benzene, it reports how much was present at the time of sampling. (Neighborhood pollution watch handbook – Bucket Brigade, p9)

The residents had to first research what types of chemicals are released by the local industrial polluters. They learnt that they were being exposed to chemicals such as sulphur dioxide, nitrogen dioxide, benzene, volatile organic compound emissions etc. The "Bucket" air sampler is so simple that even ordinary citizens are able to use it to measure air pollution that is making them ill.

The type of learning that takes place here is more formal, systematic and structured. What started as a consciousness raising group at community organisations now became structured training sessions. (Newman, 1995)

Those interested in participating in the program attend a day of training held by GCM on air pollution, health, types of monitoring and hands on practice with the "Bucket". This is followed by intensive field training on taking samples and their first sample is taken. By building a partnership with GCM the community is assured of technical assistance and the people in the community are linked with other community struggles to build a larger movement for corporate accountability.

The community learnt that there are at least two important prerequisites for change to be effected. Firstly, by forming a collective whole as well as participating in unison would make them a figure to be reckoned with. Secondly, in order for change to come about they needed to become educated around the issue. This education is a method of empowering them with knowledge and skills to challenge the industries.

Having presented a review of the history of environmental struggles which provides a contextual basis of this study and providing a list of some of the things learnt by the residents in and during the struggle, I would like to present an analysis of learning in the struggle which will be looked at in terms of the research questions.

CHAPTER SIX

AN EVALUATION OF LEARNING IN THE STRUGGLE AGAINST POLLUTION

6.1 Introduction

In presenting an analysis of the learning that takes place in the struggle for clean air, I will focus on the research questions as set out in chapter one and also show how this study is related to previously studied literature.

6.2 What did they learn?

6.2.1 Realize that private troubles are really public issues

In the past many of the residents living in the South Durban Basin assumed that their respiratory and other skin related illnesses were hereditary and as such were personal experiences or individual 'troubles' to be dealt with. The terms 'trouble' and 'issues' have been coined by Wright Mills (1970). He says that they are distinct in that trouble is a private matter when values, which are cherished by an individual, are felt by him to be threatened. An issue on the other hand is a public matter when some value, which is cherished by the public is felt to be threatened. (p15)

We can look at ill health in the South Durban basin in these terms. This area has a population of over 65 000 and if one person has asthma then he/she may consider that, his/her personal trouble and for his relief he could go to a doctor. But in this same population, if 5000 people suffer a similar illness then that is an issue. If a matter is an issue then one cannot hope to find a solution in any one individual but rather in the social and or political structures of society.

The people went through a significant learning process when their assumptions had been challenged at mass gatherings. What seemed a personal issue was now seen as a common problem experienced by many. They began to see the link between the industries emissions and their illnesses. Attendance at these meetings, at this stage, served an important function, that is, to raise awareness of pollution hazards among residents.

6.2.2 Understand that pollution also affects the environment

The residents not only learnt that the emissions by industries affected their health but they also learnt that the pollution affected marine life, plants, climatic change and could also effectively impact on tourism. When speaking to Mrs Pillay, she said,

> "I understand now why the fish that we catch has a black oily coating. Even the plants that we plant have black dust on it. Our netted curtains just tears because of the dust that settles on it. When we wash our white curtains the water is black. We can't open our windows and doors. Outside the smell is so terrible you feel like spewing. We are like prisoners in our own homes. Go to any house and they will tell you the same thing." (interview, 14 August 2002)

6.3 How did they Learn?

For the residents in the South Durban Basin their learning has developed from their experience and their social interaction within the group. They work together and with experts in the organisation to solve the problem of high emission levels in the area. The scientific knowledge gained regarding pollution and its effects on health and the skills developed in taking samples of pollutants are learned in the context of their everyday situation. This is the real world from which they have created meaning. Their situation has presented them with the challenge to gain the expertise, investigate the problem and make decisions together to bring

about change. Learning thus becomes a social process which is dependent on interaction with others.

According to Foley (1999) much of the learning in social groups is largely informal and often incidental. In this study learning is embedded in social action. It takes place in the struggle between the residents and the industries. When I interviewed the residents in the South Durban basin they were surprised at the amount of learning that had taken place, which I revealed. They did not recognise it as learning as they were focused on their efforts in action against the industries. They gained knowledge on the nature of pollutants and its relationship to health. Their everyday experiences enabled them to challenge and develop a more critical view of authority and expertise. They also began to recognise their own ability to influence decision-making and see themselves as social actors in the struggle for autonomy. Foley (1999) says that all this is made possible because,

- The community organisation is representative of this marginalised group.
- The experience and social position of the members in this group is relatively similar.
- The members are motivated and make the time to critically reflect on their subjective experience (p64).

6.4 How did they use this knowledge?

People knew that pollution affects their health because they saw the similarities in illnesses with others. Although this knowledge is important in conscientising people regarding their experiences of the environment, it was not sufficient to bring about change. The people needed to acquire 'really useful knowledge' in their struggle for social justice. This knowledge lay in the social circumstances of their everyday life. Thompson (1997) said that, "'really useful knowledge' should

help them understand both the nature of their present condition and how to get out of it." (p145)

The residents knew that the only way they could change their situation was to get the industries to accept liability for their actions. Thus radical education based on 'really useful knowledge' was used as a political strategy to challenge the relation between structural injustices and environmental degradation and to advance visions of a better society.

Radical education implies critical thinking and the confidence to challenge what is generally taken for granted as inevitable. For many years residents accepted that the industries would pollute and it was unavoidable. The residents now realize after being exposed to the media and attending mass meetings that this should no longer be tolerated. Thus the community in the South Durban basin had independent studies done in the area.

Residents of the South Durban basin teamed with GCM to promote change in the area. When the residents did the 'bucket' testing to gather evidence of pollution, it was proven that the level of benzene was very high. There was no way that the industries could deny this because the sampling technique is approved by the EPA. Engen has to date admitted that they are a contributory source of pollution but however deny that they are a major cause of pollution. By Engen accepting part liability for polluting the environment, this is a major step forward for change.

Engen has now embarked on an Environmental Improvement Programme which is a five year plan that will affect all environmental aspects of the community.

Many residents realize that organizing is the key to success. Some were responsible for liaising with the media and stakeholders, others were responsible for scheduling meetings and there were those who were specifically called to co-ordinate the 'bucket brigade'. One person from each of the functional groups is appointed to attend a weekly meeting to discuss steps to follow in the struggle.

Lovett (1983) said that change cannot be achieved without critical thinking without a praxis of action and reflection. In another incident, when high levels of pollution were reported at Settler's Primary School, people challenged authorities to stop the emissions of pollution. When nothing was done, the community drew up a list requesting basic emergency medical facilities for the school which they felt the industry was obliged to pay for. When this too was rejected the organisation began to reflect and learn from their failures and victories and analyse their actions, thus leading to more drastic forms of protests like marching with the sick to the gates of Engen and SAPREF on 4th May 2001.

Radical education based on 'really useful knowledge' is a means to emancipation. It is basically an attempt to develop autonomous beings who will have control over their lives (Johnson, 1979). Thompson (1997) says that it is possible to achieve autonomy because there is power within all of us and within the relationships we make with each other. We need to use the determination and power within us to drive ourselves out of our situation. Feelings of despair and alienation can constrain us.

To bring about the desired changes is not only determined by structural changes or by significant individuals with superior qualities of leadership but also by exercising a great deal of imagination, critical thinking and joining with others in collective action.

The people use the knowledge gained from their lived experiences to connect with similar or related experiences of others, in order to establish a 'critical mass' which joined together to develop collective forms of social action to achieve political change (Thompson, 1997, p146).

The learning of the residents in the South Durban area was significant because they acquired new skills and knowledge which they continue to use. They gained understanding of State representatives like the Minister of Environmental affairs

and the judges. They also developed skills in working within a democratic organisation like SDCEA.

6.5 Effects of involvement in public issues

Well administered community organisation has ensured the sustained involvement of residents in public issues. One of the outcomes of participation is that many have regained their self-esteem and self confidence. They no longer feel unworthy and inadequate. They have begun to see themselves as competent people who have something to contribute to society. Meena explained,

> "Since I'm in the body corporate, people respect me. Before they don't bother to even greet me. Now they ask me, 'what's happening at the meeting, which big shot will be there'. I have to know these things." (12 August 2002)

By being involved in the struggle people saw that they all wanted the same things for their families, ie. a clean and safe environment. In the negotiation process of this, people became very supportive and a great sense of solidarity began to develop. Previously it was an attitude of, 'who cares about these long winded speeches, I have a job to hold'. Now, by standing and working together as a team many people are beginning to see changes taking place and thus see the benefits of working as a collective whole.

6.6 Social action and learning

Social action is generally a response to threats of social justice. The Black people who were relocated to the industrial basin during the apartheid era, experience environmental degradation where the pollution levels are dangerously high. Before people could engage in action against environmental injustices they had to make the link between pollution and its effects on health. This was one of

the roles of community organisation. They had to encourage learning in the preparation for action, in the action itself and in their reflection on action.

Radical education is a tool to be used in social action and political struggles. During social action the people underwent a process of learning, much of which was incidental for example the people learnt that benzene affects the central nervous system. They have become aware of their potential to learn and when certain tactics like picketing and marching had little effect, they employed new strategies of protest against the industries. They took evidence of pollution using the bucket sampling method to make government aware of the unacceptably high levels of pollution and to put pressure on industries to do something about it. The residents worked collectively and co-operated in order to learn as a group. Some acted as "sniffers" who when they smelt or saw evidence of pollution, allerted those taking the samples of pollution.

When samples with high pollution levels were obtained, the details were made available to the media to alert people as to what was going on and to gain support in the struggle. Activists come together to compare and analyse their experiences and decide what future learning and action they will undertake. Collecting information is important but once collected it is how you use the information that can make the difference in getting action to make the community free of pollution.

6.7 Learning collectively through their experience

According to Lave's (1991) Situated Learning Theory, learning develops from experience and social interaction. The context in which people learn and their interaction within the group are important aspects of the learning process.

The people in the South Durban Basin share in their experience of social and environmental injustices and as such recognise their interdependence (Thompson, 1997). All people living in the basin are at risk of chemical

exposure. The residents realize that in order to bring about change they need to collaboratively find ways of making the industries accept accountability for the high levels of emissions in the environment. Although they know that their neighbourhood is being invaded by harmful toxic chemicals everyday, they needed to prove it by documenting it.

The bucket testing, as mentioned previously, is a good example of how people worked together in their polluted environment to collect evidence against the industries. Everyone was told to keep a basic log book that records the date and time of odors and pollution incidents. The people have learnt that this simple technique is very effective in demonstrating that many people are experiencing the same problem at the same time.

6.8 Motivating forces for involvement in the struggle

There are many reasons why people do or do not participate in collective social action: By social networks, friends are recruited by friends. Because they like their friend and want to be around them they may participate in collective social action. They may not necessarily understand or agree with the cause. They may also participate in social action because those who have asked them to participate have supported their causes in the past.

Sometimes people do not participate in collective social action even though they agree with it. They avoid action because of the personal risks involved (fear of expulsion from the industry at which they are employed) or because they do not have the time or money to do so.

6.9 Nature of their involvement

The goal of community organisations was initially on helping people build relationships in their locality and develop partnerships with stakeholder. This set the foundation for people to voice their dissatisfaction and challenge those in

authority. Protest marches, picketing, attendance at mass meetings and their own locality served as learning sites for people. They developed a level of scientific literacy which helped them identify the various types of pollutants in the air and its impact on their health and lives.

In this struggle against environmental injustices everyone has a role to play as each person has their strengths and weaknesses. Every willing person is given a responsibility and a task to perform. The professionals concentrate more on the technical aspects and the laymen, being the ordinary residents, concentrate on the process of completing the task, ie. taking the sample or recording the evidence. No single competency is considered more significant than the other in solving the problem of pollution. After all, their desire is to empower people collectively, not individually. Wenger (1998) seems to be in agreement with this idea of working collectively. He says, "We will have to value the work of community building and make sure that participants have access to the resources necessary to learn what they need to learn in order to take actions and make decisions that fully engage their own knowledgeability" (Wenger, 1998, p10).

Because of the limited number of buckets which cost in the region of R400, not everyone could participate in the bucket sampling, however, many are involved in keeping a log book of odors and pollution problems they experience. In their participation they have become skilled in group dynamics which stimulate learning. Their role is crucial in that since they live in the area that experience odors they are regarded as the 'sniffers' or the early warning network for the people with buckets. Wildemeersch supports the idea of involving as many people as possible in the process of problem posing and problem solving. He cites Roling (1995) who call this "the stimulation of 'agency'", which means, "the capacity to influence the context, based on a collective deployment of means and organisation" (Wildemeersch, 1998, p259). The people forced the SDCEA to

seek government intervention to pressurize the industries to lower their levels of pollution.

6.10 Possible reasons for non-participation

Whilst community organisations have made great strides in popularising the pollution issue and focusing on active participation in public life by citizens, there is still a significant number of people who are not totally committed to the struggle for clean air. They remain inactive and to an extent apathetic to this issue. In the light of this study I would like to look at some possible reasons for their limited or non-participation.

Many of the residents, especially in the Settler's Primary School area have a preoccupation with their impoverished state. On speaking to many of the residents they say that the more pressing needs are to be or stay employed at the refineries, to put food on the table and to pay the mounting medical bills.

> "If we hold boards and march that can't make our stomach full. We have to work hard, sometimes on Saturdays and Sundays. We borrow money to buy food and pay doctor's bills", said Selvie (interview, 3rd August 2002).

It is however, not news to them that the high levels of pollution are related to the high rate of respiratory illnesses. They have free access to the local newspaper in which the environmental problems are publicised. They were informed of the recent spillage via the radio stations.

Another woman, Pearly, spoke of how her husband was afraid of speaking out against the industries for fear of being victimised and losing his job. She said that he believed that 'half a loaf is better than none'. He was afraid that too much community action may result in closure of the industries. She said that she refused to be silenced by the industries any longer and boldly spoke of how her

husband was a victim to the evils of pollution. Because of his direct exposure to toxins he had developed a malignant brain tumour. She said,

> "While he was still in hospital, he was replaced. He was not even dead and they found someone to take his place. They showed me that he was just a number and nothing else. They took away my husband and the father of my two little babies. They didn't even take time to know us" (interview, 8 August 2002)

This community has suffered many social injustices which has impacted on their degree of participation. This 'Valley' as this area is sometimes referred to lacks a community hall and many of the meetings are held at a distance which makes it difficult for these people with no transport to attend. Some do not attend meetings because of their obligation to care for the sick and aged.

On speaking to the majority of the interviewees, I have gathered that their past experiences have made them despondent and suspicious of anyone wishing to speak to them. The common feeling was that many political leaders have come and promised them a better and healthier life but they realized that it was merely to gather more votes during the elections because they were never seen again. If anything, they had learnt to be critical of the motives of the political leaders. "They bring us food hampers because they know that is our weak point. We don't see their face again" said Mrs Pillay (interview, 14 August 2002).

A significant observation made during this study was that a large percentage of activists were women. This could probably be due to the role that women play in nurturing relationships and building unity in the family. This involves listening, sharing, attending to people's needs or celebrating significant moments in their lives. Hope and Timmel said that "this weaving forms the social fabric of a society and women have been the invisible weavers of the web of community and cultures" (Hope & Timmel, 1996, p5).

This chapter has explored how people have moved from believing that their illnesses were not personal troubles which they had to deal with individually, to learning that they were public issues which had to be dealt with collectively. Hence the need for organisation and collective social action. I will conclude this chapter by presenting a summary and outlook of the study.

6.11 Summary

With poor, working-class residents in the South Durban area being marginalised and located next to hazardous and toxic waste dumps it is understandable why they have taken such a firm stand in the eradication of environmental injustices which violated their basic rights as well as the lives and health of the people.

The residents who are continually plagued by illnesses are fighting a lengthy battle in an attempt to eliminate the high levels of pollution that they are exposed to. This thesis has attempted to portray the nature of learning and the progression of social action that the community of the South Durban Basin underwent.

The industries' greatest concern was in increasing profits and the government's concern was to encourage industrial expansion which would ensure huge revenue for the country. Many of the stakeholders did not care that the pollution emitted was causing long term damage to the health of the people and government legislation did not provide protection for these people.

When the residents learnt of the impact of pollution on health, many sprang into action. They did not know how to campaign but they knew that they wanted to make their concerns known and thus bring relief to their situation.

In acquiring 'really useful knowledge' the people were able to identify the real decision-makers and challenged the injustices that they suffered. The programme of the Bucket Brigade was one way of assisting them in gathering evidence to make industries accountable and highlight the concerns of the people.

In gaining small victories, the community was motivated to strengthen allegiance to organisations like the SDCEA and were spurred on to continue their participation in the struggle for clean air.

6.12 Outlook of study

The central idea implied in this thesis is the evolution of the community as an integrated whole, which is decisive in bringing about change. We see that collective social action is an indication of how people will respond to their needs as they experience it.

Evidence shows that participation in community action is however, not automatic. It is to an extent instigated by community organisations whose initial role was in raising awareness about the impact of pollution on their environment and daily lives. To bring about change, the community then had to be mobilised into action.

It is my opinion that full community participation can serve to strengthen the role of community organisations. In this way they will be more effective in their negotiations with authority and the stakeholders regarding the issue of pollution which would force them to respond to the concerns of the community.

Thus one can conclude that political change that supports one's struggle (no matter how small), collective social action, participation as well as becoming well

informed on the issues that one wants changed, are important factors in realizing positive outcomes of social action.

In the estimation of some, residents still believe that the people are fighting a losing battle since Engen and SAPREF are too powerful to be defeated. To them the problem of emissions, housing and other social issues are still in existence. But Des D' Sa the spokesperson for the SDCEA believes that in the past fifteen years of the struggle much was accomplished. These are some of the victories:

- For the first time the community is represented to give input on the permit system.
- They are part of the risk management team.
- A new air pollution act has been drafted since 1965.
- Since the media is involved, the struggle of the people has gained national and international recognition.
- There is now a greater awareness of the impact of pollution on the health of the people and the environment.

BIBLIOGRAPHY

Babbie, E, 2001, *The Practice of Social Research,* (9th edition), Wadsworth-Thomson Learning, Australia.

Barr, Jean, 1999, *Liberating Knowledge, Research, feminism and adult education*, NIACE, Leicester.

Blecher, S., Aug. 1999, The Legacy of Mining (Video recording) 2001, Special Assignment, Kagiso.

Bless, C. & Smith, C.H., 1995, *Fundamentals of Social Research Methods,* An African Perspective, 3rd ed., *Juta, pp.83-95.*

Carnie, T., 2002, 'Engen caused Pollution', Natal Mercury, 8 Mar., p4.

Cohen,L & Manion, L., 1984, *Research Methods in Education,* Croon Helm, London.

Community Talk, 2000, 28 Jun. – 24 Jul.

Davidson, J. O'. C. & Layder, D, 1994, *Methods- Sex and Madness,* Routledge, London.

Dr. Seetharam, B., 2000, 'Adverse health effects of pollution on children and educators – Settlers Primary School, Merebank', A scope of the problem, Nov. 2000, pp. 1-7.

Enslin.S, 2002, 'South Durban Community and Engen do battle', Sunday Business Report, 25 Aug., p12.

Finger, G., 1989, *New Social Movements and their implications for Adult Education,* journal Vol. 40, No.1, pp15-22.

Foley, G, 1999, *Learning in Social Action – A contribution to understanding informal education*, Zed Books, London.

Holford,J. 1995, Why Social Movements matter: Adult education theory, cognitive praxis, and the creation of knowledge, journal vol.45. No.2, pp.95-111.

Hope. A & Timmel. S, 1996, *Training for transformation* – A handbook for community workers, (revised ed.), Gweru Mambo Press.

Horton,M & Freire,P. 1990, *We make the Road by Walking* – Conversations on education and Social Change, ed. Bell, B. Gaventa, J. Peters, J. Temple University Press, Philadelphia.

Hubert, M & Blalock, Jr, 1970, *An Introduction to Social Research*, Prentice Hall, New Jersey.

Hughs, J, 1980, *The Philosophy of social Research,* Longman, London.

Jarvis, P, 1987, *Adult Learning in the Social Context*, Croom Helm, USA.

Jarvis, P, 1992, *Paradoxes of Learning – On becoming an individual in society,* Jossey-Bass Publishers, San Franscisco.

Johnson, R. 1979, *Radical Education and Working Class Culture,* Hutchinson, London.

Kilgore, D.W. 1999, Understanding learning in social movements; A theory of collective learning, International Journal of Lifelong Education, vol. 18, No. 3, pp.191-201.

Larson, D., 2002, 'Bucket Brigade' – Expanded edition: Neighborhood Pollution Watch Handbook.

Lave. J & Wenger. E, 1991, *Situated Learning* – Legitimate Peripheral Participation, Cambridge University Press, U.K.

Louisiana Bucket Brigade, n.d, 'Land Sharks', Orion Refining's Predatory Property Purchases, Inkworks Press, L.A.

Lovett,T. 1988, *Radical approaches to adult education:* A reader, ed. Campling. J, Routledge, London.

Lovett, T., Clark, C. & Kilmurray, A, 1983, *Adult education and community action,* ed. Compling,J., Croom Helm, London & Canberra.

Le Roux, M., 2002, 'They'll take legal action', Natal Mercury, 15 Mar., p.9.

Merriam,S.B. & Simpson, E. 1995, *A guide to research for educators and trainers of adults,* (2nd ed.) Plan kruger publishing company.

Mouton Johann, *How to succeed in your Master's and Doctoral studies*- A South African guide and resource book, Van Schaik publishers.

Newman, M. 1995, Adult Education and Social Action in: *Understanding Adult education and Training*, ed. Foley.G, Allen and Unwin, St Leonards.

Newman. M, 1999, *Maeler's Regard* – Images of adult education, Stewart Victor Publishing, Sydney.

O'Sullivan, D, 1989, *Social Commitment and Adult Education,* Cork University Press, Ireland.

Palan, V. M. 2001, *Social Learning in Environmental Action,* Unpublished Masters Dissertation, University of Natal.

Pather,S., 'Residents faced gas leak threats', Leader, 6 Apr., p. 3.

Paulo Freire, 1972, *Pedagogy of the Oppressed,* Penguin.

Peil.M. 1982, *Social science Research Methods* –An African Handbook, eds. Mitchell,P.K. & Rimmer.D, Hodder and Stoughton, London.

Popenoe, D., 1995, *Sociology,* Prentice Hall, New Jersey.

Schutt, R.K, 1996, *Investigating the social World – The Process and Practice of Research,* Pine Forge Press, London.

Scott. D et al, Double trouble: environmental injustice in South Durban, *Agenda* 52, 2002, pp51-57.

Smith, R.M, 1985, *Learning How to Learn – Applied Theory of Adults,* Open University Press, Milton Keynes.

Thompson, J., 1997, *Words in Edgeways: Radical Learning for Social Change,* NIACE, Leicester.

Welton, M., 1993, Social Revolutionary Learning: The New Social Movements as Learning Sites, *Adult Education Quarterly*, vol. 43, No2, pp152-154.

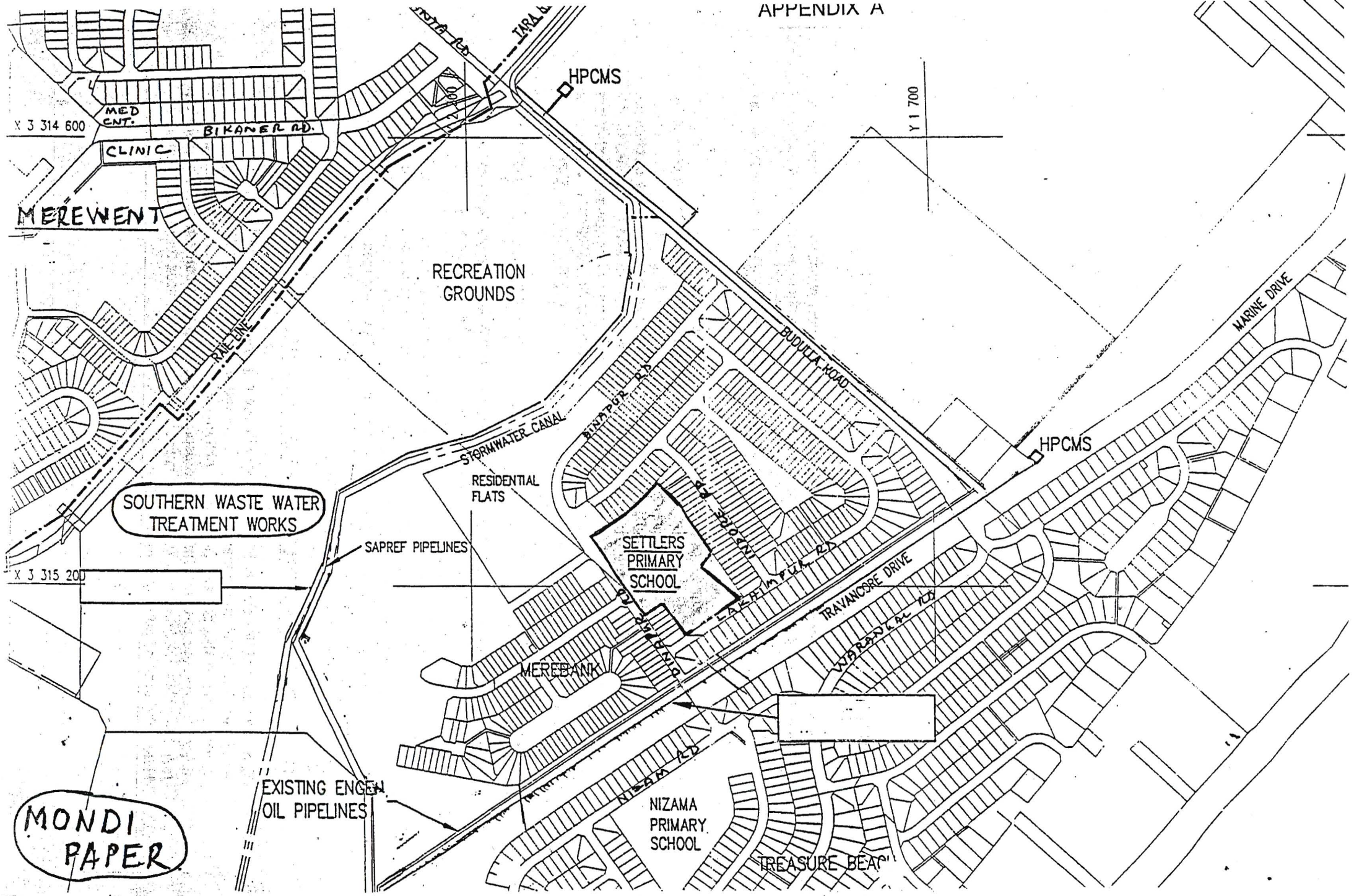
Wenger, E., 1998, *Communities of Practice. Learning, meaning and identity,* Cambridge, Cambridge University Press.

Wildemeersch D & Jansen, T, 1992, *Adult education, experiential learning and social change* – the postmodern change, Vuga, Driebergen.

Wildemeersch. D et. al, 1998, Social Learning: a new perspective on learning in participatory systems, *Studies in Continuing Education*, vol.20, No.2, pp251-265

World resources institution, 1999, *'Rising energy use: Health effects of air pollution'*, [online] Available: http:// www.wri.org/wri/wr- 98-99/airpoll.htm.

Wright Mills. C.W, 1970, *The sociological imagination*, Harmondsworth, Penguin Press.


HPCMS
MED CNT.
CLINIC
BIKANER RD.
X 3 314 600
Y 1 700
MEREWENT
RECREATION GROUNDS
RAIL LINE
BUDUCEA ROAD
MARINE DRIVE
STORMWATER CANAL
BINTAPUR RD.
HPCMS
RESIDENTIAL FLATS
SOUTHERN WASTE WATER TREATMENT WORKS
SAPREF PIPELINES
SETTLERS PRIMARY SCHOOL
LAKEHAMPTON RD.
TRAVANCORE DRIVE
X 3 315 200
MEREBANK
NIZAM RD.
EXISTING ENGEN OIL PIPELINES
NIZAMA PRIMARY SCHOOL
TREASURE BEAC
MONDI PAPER
TO SAPREF

APPENDIX B

INTERVIEW SCHEDULE

A. Residents around Settler's Primary School area

1. For how long are you living in the area?
2. How did you know that your child's illness was related to pollution?
3. Knowing this relation, why did you not re-locate?
4. You seem to know a lot about environmental pollution. How did you get to learn all this information?
5. How did you become actively involved in the struggle against environmental pollution?
6. Who is it that you admire or respect for their efforts in the fight against environmental pollution? Why?
7. What are you hoping to achieve with your contribution to the struggle against pollution?
8. Do you see a relation between the old apartheid laws and environmental pollution? Tell me more about your understanding of this.
9. What changes have you observed over the years that has taken place as a result of people's efforts in their fight against environmental pollution?
10. In your opinion why are some people apathetic to the fight to bring about change?
11. How have you made your children aware of the issues around pollution?
12. Is there anything else that you would like to tell me?

B. DES D' SA .....

1. Tell me about yourself. (How long you lived in the area, family background etc.)
2. What was the turning point in you deciding to become actively involved in the fight against environmental pollution?
3. You seem to know a lot about environmental pollution, its related effects and scientific facts on the subject. How did you come to learn such information?
4. In your opinion how would you describe the rate of change regarding environmental pollution?
5. Do you see a relation between the old apartheid laws and environmental pollution? Tell me more about your understanding of this.
6. What are some of the changes that have taken place as a result of the various organisations efforts in their fight against environmental pollution?
7. What is the ultimate realistic aim of the various community organisations regarding pollution?
8. Why do you thing that some people are still apathetic inspite of experiencing the effects of pollution?
9. What is your role in the various movements?
10. With the renewal of the gas pipelines residents are complaining of gas leaks. SAPREF says it is 'gas oil' which is now under control and is not a threat. What is your opinion on this issue?
11. Is there anything else that you would like to tell me?

3. Dr B. SEETHARAM

1. What is your role in the fight against environmental pollution?
2. When did you come to get involved?
3. Explain what makes you so passionate about your role in this struggle, after all you could like many doctors who live away from the area see themselves as merely providing a service for a fee?
4. How serious is the problem of environmental pollution?
5. I have heard you've done some research on the related effects of environmental pollution and certain illnesses. Could you please brief me on some of your findings.
6. How have parents, the elderly and those affected reacted to your findings?
7. Is there anything else you would like to tell me?

APPENDIX C

Room No	Br.Asthma	Sinus Related Complaints	Non-specific Chest Problems	Total
RA	5	2	6	13
RB	2	1	3	6
1A	7	11	23	41
2A	4	2	11	17
2B	6	13	6	25
2C	4	5	13	22
3A	3	5	3	11
3B	5	5	8	18
3C	8	3	8	19
4A	7	4	7	18
4B	7	9	5	21
4C	3	4	1	8
5A	3	4	1	8
5B	4	3	4	11
5C	3	3	3	9
6A	4	3	6	13
6B	5	7	3	15
6C	6	6	1	13
7A	4	9	5	18
7B	8	14	5	27
7C	2	4	4	10
TOTAL	100	117	126	343

Total number of children in school: 859
Incidence of Respiratory Related Illness: 40%

APPENDIX D

S D C E A

(South Durban Community Environmental Alliance)
invites you to attend a

MASS PUBLIC HEARING

SAT 24 AUGUST 2002 AT 2:00 PM

FAIRVALE SECONDARY SCHOOL, TARA RD

SDCEA PUTS THE LIVES OF PEOPLE FIRST!!!
ENGEN PUTS PROFITS ABOVE PEOPLE!!!

Have you in one way or another been **AFFECTED** by the high levels of pollution, pipeline leaks, or accidents caused by industry?

Are you suffering from **ASTHMA?**

Are you suffering from **CANCER, LEUKAEMIA** or other terminal illnesses?

Do you know of a friend or family member suffering from CANCER?

Do you know of a friend or family member who has DIED of these illnesses?

Are you tired of spending a fortune on MEDICAL BILLS each year due to pollution problems?

Is the value of your **PROPERTY** dropping due to pollution?

Are you concerned about the possibility of being relocated?

Do you think your family deserves COMPENSATION?

Do you want to listen to the **SUCCESSFUL STRUGGLE** of African American who successfully challenged SHELL in the USA?

Bring your asthma pumps, crutches, etc and join us to speak out against this mass abuse to create a cleaner, healthier environment for us all!!!

A candle light procession will proceed after the meeting to Engen Refineries (across the Road). Candles will be provided.

Secure parking at school grounds.

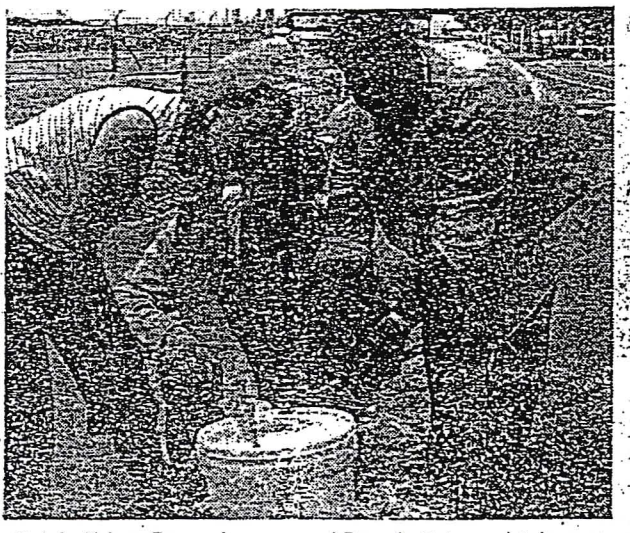
THE FUTURE OF SOUTH DURBAN LIES IN YOUR HANDS!

APPENDIX E

Enviro workshop trains esidents to test for pollution

JNDWORK
he interna-
Global Com-
y Monitor
a workshop
urday, 19 and
y, January 20,
ban, with the
Durban Com-
y Environ-
l Alliance
EA) to de-
community-
pollution
oring systems.
se monitoring
ms focus on
mple, "bucket
le" method.
e system is
effective and
e assembled
locally for just over R400 but is reliable and has been approved by the United States Environmental Agency.

"This new expansion of the community right to know is in direct response to the failure of industry and governments to monitor and clean up toxic pollution that trespasses into fence-line communities," said Desmond D'Sa, chairperson of SDCEA.



Dulcie Krige, Denny Larson and Brenda Peterson take an air sample using the simple, community-based "bucket" method of sampling.

Residents were trained to use other proven procedures such as log books, photographs and video to collect evidence of toxic spills, smoking flares, explosions and fires.

GroundWork spokesman, Ardiel Soeker, said, "This partnership between community-based, national and international organisations, provides a modus operandi for assisting community-based organisations to hold big multi-national industry accountable for their actions."

PROGRAMME

The workshop is part of a three-year GroundWork programme that seeks to assist SDCEA in fighting pollution in the area.

APPENDIX F

CONFIRM OUR SUPPORT FOR THE VIEW EXPRESSED BY THE MEREBANK COMMUNITY AND CALL ON THE DEPARTMENT TO :

1. reject the application of Sasol,
2. permit the community to make oral submissions to the Department.
3. request Sasol to properly investigate route 6,
4. request Sasol to undertake a cumulative risk assessment,
5. order the conducting of a proper Enviromental Impact Assessment and Social Impact Assessment for the greater Durban South Basin before considering the construction of any potentially hazarduous installations.
6. Consider that the community is going to live next to the pipeline and not Sasol and that all things being equal the community preference should prevail.

12:04:01

NAME OF SIGNATORY	ADDRESS	SIGNATURE
D. Rauuth	93 Junagarh Rd MB	D. Rauuth
M. MAISTRY	90 NIZAM ROAD, MBK	Maistry
M Rossouw	16 Mia Avenue	Rossouw
S Nalasure	4 Mayur Pl	[signature]
P Govender	49 Sialkot Crest	P. Govender
R Sailr	18 LAKHIMPUR	R Sailr
PChelly	09 Bikaner Road	[signature]
M. Oliver	25 Poona Place	[signature]
R. KALIDASS	37 Belcaw Road	[signature]
H. KAPITAN	38 IMPALA DR.	[signature]
V. KAPITAN	" " "	[signature]
M-H. KAPITAN	" " "	[signature]
M KAPITAN	" " "	M. Kap
N. KAPITAN	" " "	[signature]
[illegible] PILLAY	34 Bhat Road	[signature]
R. Bussack	67c Duranta RD	[signature]
R. Saunders	"	[signature]
A. Nathaniel	97 St James Gardens	Nathaniel
R. Chetty	19 [illegible]	R Chetty
R. PILLAY	17 Hooghly Place	[signature]
M. Saunders	25 Duranta RD	[signature]
MAHESH SINGH	38 GULMAL CRESENT	[signature]
L. Olivier	4E PANAX PLACE	L. Olivier
N. Von Der Merwe	4H Panax Place	N.VDMERWE

APPENDIX G

MEREBANK ACTION SUCCESSFUL

Residents win interdict against Sasol gas pipeline

TONY CARNIE
ENVIRONMENT REPORTER

COMMUNITY representatives in Merebank were granted a last-minute interdict in the Durban high court yesterday to prevent construction of a Sasol gas pipeline to the Engen fuel refinery.

The interim interdict, granted by Mr Justice Booysen, follows a bitter controversy over the routing of a pipeline containing flammable methane-rich gas through a residential area. The interdict, effective until April 27, prevents KwaZulu-Natal Environment Minister Narend Singh from considering an application by Sasol Gas to build the pipeline until the community is given an opportunity to present further objections.

News of the interdict coincided with an official announcement by the Engen refinery that Mr Singh's department had given Sasol the green light to go ahead with the project.

An Engen spokesman was unaware of the court interdict last night and declined to comment. Sasol Gas spokesman Charles Parsons could not be reached for comment.

Merebank Environmental Action Committee spokesman Rajah Naidoo expressed delight at the success of legal action. He said residents believed the KZN department of environment affairs had been "manipulated" into approving Sasol's application for a permit.

"The department has violated the residents' rights and seems bent on approving the permit speedily, without taking our concerns into account." He said residents had no option but to seek a court interdict after senior officials in Mr Singh's department refused to delay making a final decision on the permit.

"The perception is that politicians support Sasol and Engen [illegible] the department to approve the pipeline."

He said his committee was not opposed to development, nor to the construction of a pipeline in principle, as it believed the use of methane gas fuel at Engen would help to reduce air pollution levels.

"Our main concern is that the route proposed by Sasol is too close to densely packed residential areas and to several underground fuel pipelines. We believe they should consider safer alternative routes proposed by the community, even if this involves higher costs."

In a statement earlier in the day, before the interdict was granted, Engen said the gas pipeline project would improve air quality considerably in the refinery's vicinity.

Pollution

The project entailed replacing heavy high-sulphur fuel oil with cleaner-burning gas to decrease sulphur dioxide pollution from the refinery, from 39 tons to 18 tons a day.

"This means Engen will meet its 2003 emission target of 25 tons per day, as stipulated in its 1998 agreement with the community, about 18 months ahead of schedule. The conversion to methane-rich gas will also reduce particulate emissions from fuel-burning operations by 55%, eliminate solid waste spills from fuel oil, reduce noise pollution and result in a 27% reduction in emissions of nitrous oxides," said Mr John Mackey, the refinery's general manager.

"The routing has been thoroughly researched and its construction and maintenance is subject to the highest international safety and quality standards. Engen's commitment to a cleaner environment will cost the refinery R55 million a year – about R1 million a week.

"The cost to us is considerable, but in the interests of our people and neighbours, it is a cost Engen is committed to bearing."

APPENDIX H

INTERVIEWS AND MASS MEETINGS

A. INTERVIEWS

1. Names of respondents living in the Dinapur Road flats and in the Wentworth area have been changed so as to respect confidentiality.

- 2 August 2002 – Jack (Dinapur Road flats)
- 3 August 2002 Selvie (Dinapur Road flats)
- 5 August 2002 – Mrs Moodley (Dinapur Road flats)
  Mrs Naidoo (Dinapur Road flats)
  Dass (Wentworth resident)
- 8 August 2002 – Pearly (Wentworth resident)
  Mandy (Dinapur Road flats)
- 9 August 2002 – Bernard (Dinapur Road flats)
- 12 August 2002 – Meena (Dinapur Road flats)
  Mrs Pearson (Dinapur Road flats)
- 14 August 2002 – Mrs Pillay (Dinapur Road flats)
  Mrs Panday (Dinapur Road flats)
- 15 August 2002 – Mr Moodley (Dinapur Road flats)
  Mike (Wentworth resident)
- 19 August 2002 – David (Dinapur Road flats)

- 23 August 2002 – Peter (Dinapur Road flats)

- 24 August 2002 – Mrs Harilall (Dinapur Road flats)

- 26 August 2002 – Mrs Ward (Dinapur Road flats)

2. 25 September 2001 - `Dr B. Seetharam – Doctor at the Merebank Medical Centre who did a study on the relationship between pollution and respiratory related illnesses on children at the Settler's Primary School, in the year 2000.

3. 12 August 2002 – Des D'Sa – Chairperson and spokesperson for the SDCEA.

4. 25 August 2002 – Denny Larson – Innovator of the original 'Bucket Brigade'.

B. <u>PARTICIPANT OBSERVATION AT MASS MEETINGS</u>

- 15 March 2001 – (Meeting called by the SDCEA). Decision on the route to be taken in the installation of the natural gas pipeline.

- 25 August 2001 – (Meeting called by the SDCEA). The community questions the punitive measure to be taken against SAPREF for the petrol spillage.

- 24 August 2002 – (Meeting called by the SDCEA). Mass public hearing of people affected by the high levels of pollution.

- 26 August 2002 – (Meeting called by the SDCEA). The community reacts to Engen's increased production plans.