

Implementation of the ISO 14001 and Acoustic Detection of Asbestos



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MSci Physics with Theoretical Physics



The organisation

MIS Environmental Ltd. is a small company spread across four sites. These sites are located at Consett, Newcastle, York and Norwich. In total the company employs approximately 50 people.

The company provides material testing services. These services include testing the properties of a particular material (i.e. properties such as the material's ultimate tensile stress, strain, thermal properties etc.) or, more often, testing buildings for asbestos.

Prior to my arrival at MIS Ltd. the first half of my task was to "design, implement and evaluate systems to comply with the ISO 14001 standard". This is an environmental standard and so my role in the company could be described as an "environmental champion". That is to say, it is my job to make MIS Ltd. more environmentally friendly.

The second half of the Project was to research into an alternative method of detecting asbestos which was based upon the experiences the company's surveyor's had. When surveying, employees found that they were able to very quickly detect that asbestos was present by listening to the noise produced when materials were 'tapped'.

The Situation and Why Change or Improvement is Needed

MIS Environmental Ltd. is a rapidly growing company; over recent years it has expanded to four separate sites and is looking into expanding further abroad.

As previously stated the company's main source of income is through their asbestos testing services. As asbestos is rarely used as a building material in the UK today, this source of income is time bound to approximately the next two decades. This means that the company will either have to diversify further or move abroad.

Whilst moving abroad is a consideration of the company, MIS Ltd. does not want to leave the areas in which it is already well established. Therefore MIS Ltd. must become more efficient to ensure it's life time in these areas is maximised.

It is this reason and the simple fact that MIS is an environmental group that means the company must improve their practices to become more environmentally friendly and more efficient.

Endeavouring to become more environmentally friendly and more efficient will have a number of effects;

- Protect the environment
- Save time and money.

- Company will promote itself more effectively to clients and the public.

Investigation

Part 1: ISO 14001

Originally it was the company's intention to apply for ISO 14001 accreditation. As I had no prior experience of this standard, I enlisted the help of Chris McConnell (Quality Manager for MIS Environmental Ltd.) and Arthur Hopgood (Site Environmental Coordinator for Electrolux).

After meeting Arthur Hopgood and reading the standard itself, it was clear that it would not be possible to complete the accreditation process within eight weeks. I was advised that completing research, writing an environmental policy and making suggestions for improvement would be an achievement.

I immediately started investigating the waste streams of the company¹. The first way that I conducted my investigation was to personally explore the facilities operated by MIS Ltd. Secondly I compiled a questionnaire² that was completed by staff from various areas of the company.

I completed the Environmental Policy³ and I compiled a number of ideas, which could now be researched further. The majority of my research was conducted via the Internet and email.

After my investigation, I enlisted the aid of two organisations; Envirowise and The Carbon Trust. These groups advise smaller enterprises in methods of becoming more environmentally friendly. This provided detailed suggestions for becoming more environmentally friendly^{4&5}.

Part 2: Asbestos Detector

For the second part of my project, I looked into what efforts the company had already made in researching acoustic detection; the company had funded a research project at Newcastle University.

After first generating my own ideas, I found that the research project actually covered the majority of my ideas. I did however have a number of suggestions to make.

The research paper proposed that the test material (i.e. the asbestos) should be subjected to a small force to produce a sound. This force would be made in a controlled manner that could be reproduced as accurately as possible. The sound produced would then be compared to known sounds stored within the device's database and finally the test material could be identified.

Suggestions for change

Part 1: ISO 14001

The first of my ideas revolved around reducing the amount of waste the company produced. This is a common, but important, approach in waste management.

One way in which I reduced waste was by reducing the amount of unwanted 'junk sales' communications. I registered with the Mail, Fax and Telephone Preference Service, which promise to stop certain types of communications before reaching the company. Due to the nature of this service there was no training of staff required and so this idea was well received by the company.

Not all waste can be stopped at the source; a company will always produce some level of waste. I realised that further steps could be taken to ensure that the waste MIS Ltd. did produce was recycled.

For example, I initiated a scheme of recycling the ink cartridges that the company was using. MIS Ltd. is required to print a large volume of reports for clients, which results in a large volume of waste ink cartridges. I discovered that Actionaid would collect our ink cartridges and recycle them completely free of charge. This allowed the company to improve it's image by supporting a charity.

Another consideration of the waste stream revealed that the company could use it's resources more efficiently. These uses included;

- Purchasing recycled paper, at extra cost to the company, specifically for internal use.
- Using email as an alternative to memos written on paper.
- Shredding only confidential information, rather than all documents.

To ensure these ideas were implemented effectively after I left the company, I wrote an Environmental Procedure document⁶. This detailed how the company should not only implement the policy, but also how MIS Ltd. could enforce the Environmental Policy by assigning such responsibilities to a member of staff.

Many of the ideas I generated for this project were not practical at the present moment in time, however MIS Ltd. still took interest in these ideas for future reference.

Part 2: Asbestos Detector

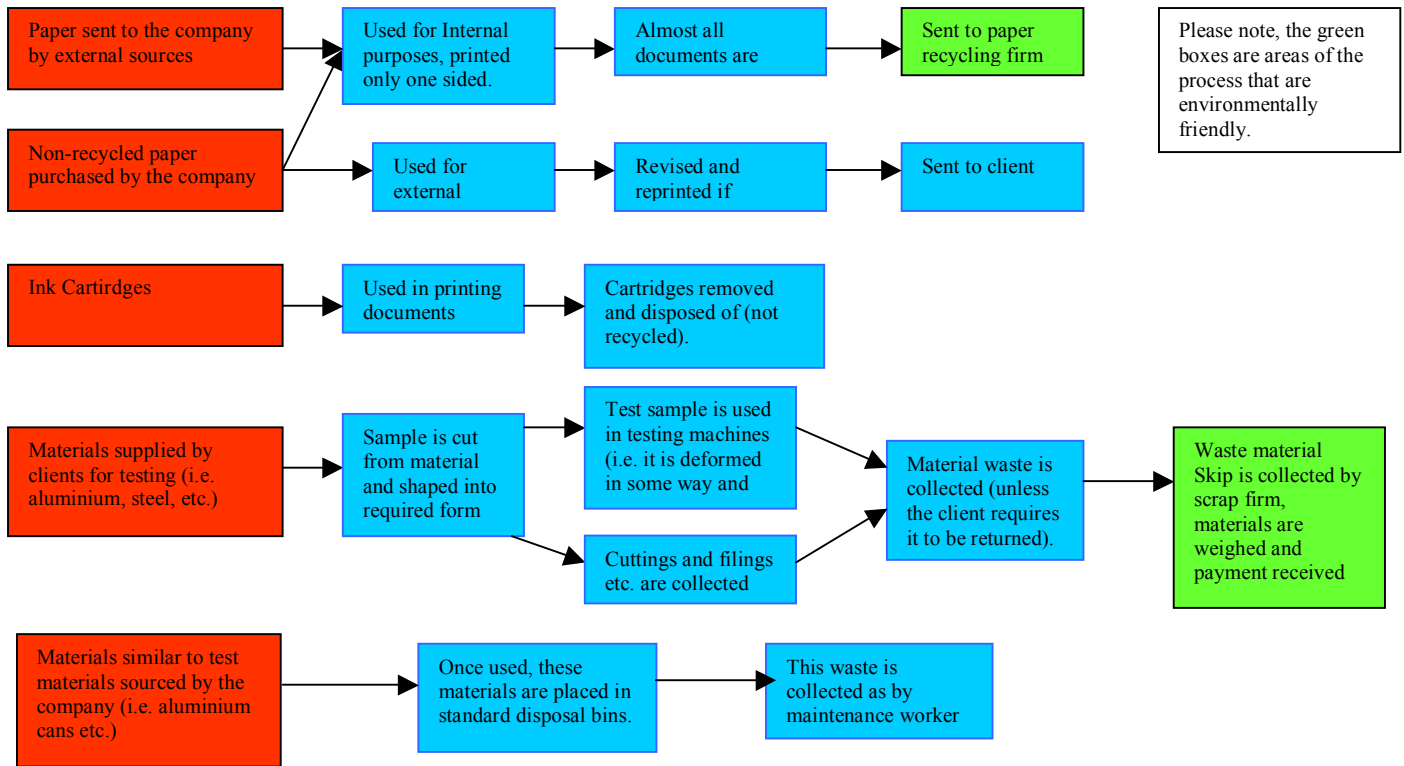
My research into the asbestos detector yielded a number of ideas. These ideas were mostly the product of my background in physics at Manchester University. These suggestions were listened to and forwarded to the research group at Newcastle University.

My role in the Change

The changes⁷ that this project initiated within MIS Ltd. were to either improve the company's environmental efforts or to increase the company's efficiency by designing a new method of detecting asbestos. It is my hope that MIS Ltd. will not only adopt the suggestions I made, but also find them to be of great value.

Word count: 1100 not including headings or sub headings.

APPENDIX 1



Appendix 2

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30th June 2005

Dear Everyone,

My name is Paul; I'm a student from Manchester (AKA 'a tax dodging skiver') who's working with the company for 8 weeks. I've been asked to start working on getting the company ISO 14001 accredited - this is an environmental standard.

We need to get a standard like this because more and more of our customers are asking what environmental policies and accreditations we have! Another reason why we need to get this standard is because as time goes on, the legal requirement is ever increasing – it would be far better if we were prepared.

To get things moving on this I'd like you all to complete the attached questionnaire.

Please do the questionnaire alone and answer honestly! I need to find out how much the average person in the company knows and what work we have already done.

I'd appreciate it if you could try to get these back to me by next **Tuesday (5th July)**.

Thank you very much!

Paul Hughes ☺

p.s. If you need more room than the lines provided then please feel free to use extra sheets and attach them when you return the questionnaires to me

Initial Review Checklist

Name;.....

Environmental Policy

- 1) Do you know if the company written an Environmental Policy?
.....
 - a) Do the public have access to this document?
.....
 - b) Do you think all employees are aware of the Environmental Policy?
.....
 - c) How can you find the policy?
.....
 - d) How would you like to be able to retrieve the policy?
.....
.....

Business Strategy

- 2) Is the environment a part of the business strategy for the company?
.....
- 3) Is there a strategy for handling waste products? Please outline this strategy.
.....
.....
.....

Management Structure

- 4) Does the company have an Environmental Management System (EMS)?
.....
 - a) How do you think you should be able to obtain a copy of this EMS if you required it?
.....
.....
- 5) Do you know if an individual has been formally appointed as being responsible for managing environmental issues?
.....
 - a) Who is this person?
.....
 - b) Is there a specific definition of this person's responsibilities?
.....
- 6) Do you think the company has identified the environmental effects of it's activities and services?
.....
 - a) Has this information been used to set environmental targets?
.....

b) If so, how?

.....
.....

c) How often is this information updated?

.....

d) Do you think this is often enough?

.....

7) Has a risk analysis of the activities and services undertaken by the company been completed?

.....
a) If so where do you think you should be able to find this document?
.....
.....

Environmental Measurements

8) Are any environmental measurements taken and recorded?

.....

a) Do these measurements include;

- i) Energy Consumption
- ii) Co₂ emissions
- iii) Water Consumption
- iv) Discarded waste products
- v) Recycled waste products
- vi) Hazardous substances
- vii) Other;

b) Where can these measurements be obtained?

.....
.....

Legal Compliance

9) Does the company have an understanding of all applicable environmental legislation?

.....
.....

a) Where is such legislation stored?

.....

b) How can you access these documents?

.....

c) What is the routine for updating this information?

.....

d) How is legislation monitored for any future changes?

.....

Objectives and Targets

10) Does the company have any objectives and targets for the environment?

-
- a) Please outline these;
.....
.....
 - b) Are these consistent with the environmental policy?
.....
 - c) Do you believe these targets to be measurable and attainable within our available resources?
.....
.....

Environmental Awareness

11) Do you know and understand the environmental policy?

.....

12) Have you, as an employee, been made aware of environmental issues?

.....

13) Have you, as an employee, been given information on environmental plans, targets and policies?

.....

14) Does a suggestion box exist?

.....

15) When you first joined the company, were environmental matters part of your induction?

.....

- a) Are environmental matters part of the induction now?
.....

16) Do you consider yourself to be adequately trained to deal with the environmental impact of;

- a) Emergency situations?
.....

- b) Normal Routines?
.....

- c) Do you think you should be trained in these matters?
.....
.....

Public Relations

17) Do you think the environmental policy portrayed accurately in company literature, media, sales material etc.?

.....
.....

18) Is the environmental policy publicly available?

.....

19) Do you think the environmental issues and benefits associated with our operations communicated effectively to all parties (i.e. employees, local communities, government bodies etc.)?

.....

20) Is there an environmental statement in the annual report or is there a separate annual environmental report?

.....

a) If so, how can this document be found?

.....

21) Does the company have procedures for dealing with press/ public enquiry?

.....

Community Involvement

22) Does the Company involve or inform the local community/ authority of environmental issues?

.....

23) Does the company hold open days for employees and residents close to work sites?

.....

Investment

24) Does the company formally consider the environment in;

a) Short-term budgets?

.....

b) Long-term budgets?

.....

25) Do employees consider environmental issues upon arrival at new sites?

.....

26) Does the company make any investments in any research into more environmentally friendly processes?

.....

27) Do you know of any grants or funding available for environmental groups/ projects/ investments etc?

.....

a) Are we using such possibilities?

.....
b) If not, why not?
.....
.....

Purchasing Policy

28) Does the company monitor the environmental performance of any of our suppliers?
.....

a) Are there any written criteria for assessing suppliers?
.....

b) Are suppliers informed about the company's environmental policy?
.....

c) Are suppliers encouraged to review their own environmental performance?
.....

29) Does the company consider the environmental effects of the materials and resources that we use?
.....

a) Is there a list of materials that the company is not allowed to purchase?
.....

b) How can such a list be accessed?
.....

c) Is there a list of preferred suppliers?
.....

Market Pressures

30) Does the company recognise environmental factors on market pressure relating to the services we supply?
.....

a) Do you think there is a "green" pressure from customers?
.....

b) Does the company meet our customer's environmental expectations?
.....

i) Are customer's opinions about the company collected (i.e. through feedback cards/ telephone enquiries etc.)?
.....
.....

31) Do our services come with an environmental declaration?
.....
.....

32) Are competitor's actions in environmental issues monitored?
.....
.....

Raw Materials

33) Are environmental impacts considered when buying and using materials?

.....
.....

a) Are hazardous materials used?

b) Are recycled materials used?

c) Are raw materials from renewable sources used?

34) How do you think the amounts of hazardous materials used can be reduced?

.....
.....

35) How do you think we can increase the amount of recycled materials used?

.....
.....

Processes

36) Are our operations with significant environmental impacts identified in writing?

.....

37) Are there written instructions for normal operations?

.....

38) Are working processes designed to minimise the environmental impact?

.....

39) How do you think we can reduce the amount of energy, water, raw materials etc. used?

.....
.....

40) Are water, energy or any materials etc. recycled or reused in our processes?

.....
.....

a) Are processes monitored to ensure they are environmentally friendly?

b) If so, how are they monitored?

.....
.....

41) Does anyone monitor and review new process technologies and techniques regularly?

.....
.....

Environmental/ Contingency Plan

42) Do written plans exist for dealing with environmental accidents and emergencies?

.....
.....

43) How are potential risks identified?

.....
.....

a) Are the environmental effects from these risks safeguarded?

b) Are the employees concerned trained and aware of these risks?

.....
.....

44) What is the written procedure for public communication in the event of an accident or emergency?

.....
.....

a) Where can this be found?

.....
.....

Insurance

45) Is the company properly insured for environmental liabilities of our activities?

.....
.....

46) Could a limit of liability be imposed?

.....
.....

47) Do our insurance company require environmental documentation?

.....
.....

Site/ Building Management

48) Do you think all of the company's premises well maintained?

.....
.....

49) Are the building's utilities properly operated and maintained (heating, compressed air, ventilation etc.)?

.....
.....
.....
61) Does the company consider the effect on the environment when choosing it's energy suppliers?
.....

.....
.....
.....
62) Do you have any ideas on how to reduce the company's energy consumption?
.....
.....
.....

Water Management

63) Do you think water and sewerage are managed properly?
.....
.....

64) Who monitors water usage?
.....

a) Have any actions been taken to reduce the consumption of water?
.....
.....

65) How are water and sewerage costs controlled?
.....
.....

66) Does the company reuse the water used in any part of it's processes?
.....
.....

67) What are the precautions to safeguard the disposal of hazardous chemicals into the sewerage system?
.....

a) Please outline these procedures.
.....
.....
.....
.....

Waste Management

68) Does the company have a means of identifying each type of waste that it produces?

.....
.....
69) Who performs the analysis of the waste?
.....

70) How is our waste sorted?
.....

71) Where are records of waste disposal kept?
.....

72) Who informs contractors about our waste disposal methods?
.....

73) How and where do our contractors dispose of our waste?
.....

74) What are the legal requirements for the disposal of special waste, do we comply with these requirements?
.....
.....

75) As an employee, do you feel that you are properly trained and aware of your responsibilities for handling hazardous waste?
.....
.....

76) What would you do in the event of waste spillage?
.....
.....

77) What are the costs of waste handling?
.....
.....

78) Is the site licensed to store any types of waste?
.....

79) Have any actions been taken to reduce waste?
.....
.....
.....

Storage on site

80) How are raw materials and waste products stored?
.....
.....

81) Can you think of any other storage method that would reduce the risk of environmental damage?
.....
.....

82) What are the legal considerations for the storage of any particular materials?
.....

.....
.....
.....
83) Do you think containers are always clearly labelled?
.....

84) What precautions do you follow when handling materials during delivery,
unloading and storing?
.....
.....

85) Are there contingency plans for spillage and for fire?
.....
.....

Emissions and Discharges

86) Do you think emissions and discharges are identified and quantified?
.....

a) Are all sources identified?
.....

b) Do you know the physical and chemical characteristics of **all** the emissions
and discharges?
.....
.....

c) Where is this information stored?
.....
.....

87) Are emissions and discharges monitored and records kept?
.....

a) Where are these records kept?
.....
.....

88) Are the legal requirements for emissions and discharges known?
.....

a) Where are copies of these requirements stored?
.....

b) Are these requirements always complied with?
.....
.....

89) Do you think new technologies and developments are reviewed and utilised where
appropriate?
.....
.....

a) Who does these reviews?
.....

.....
.....

Transport

90) Have any actions to reduce the effects of transport on the environment been implemented?

.....
.....

a) How often are commercial vehicles maintained?

.....
.....

b) Who organises this maintenance?

.....
.....

c) Where is documentation on the company's vehicles kept?

.....
.....

91) How are journeys in company vehicles planned?

.....
.....

a) Are these routes always the most efficient?

.....
.....

92) Have our vehicles had any effect on the local community?

.....
.....

93) Do you use telephone or tele-conferencing instead of travelling distances to meetings?

.....
.....

a) Have you considered as an alternative to travelling?

.....
.....

94) Do you car share with other people on long journeys?

.....
.....

Paper Use

95) Are the uses and costs of paper quantified?

.....

96) Do we recycle waste paper?

.....

a) Who oversees this?

Appendix 3

MIS LIMITED

Environmental Policy

Signed by: _____

Name - **Title (Managing Director)**
Date

Introduction

MIS LTD. recognises the effect it has on the local, regional and global environment and as such is committed to safeguarding the world in which we work and live.

We firmly believe in not only ensuring our work is of the highest quality, but also that we maintain such a high standard so that our effect upon the environment is minimized.

To ensure that we attain these high standards, we are constantly reviewing the ways in which we work and so as a result we are able to compile this Environmental Policy to explain what we are currently doing to improve the world in which we live.

The nature of the business that MIS LTD. are involved in is such that we must be environmentally friendly. The legal requirements when working with asbestos and various other chemicals are so stringent that it is impossible to not be environmentally friendly. MIS LTD. will seek to ensure compliance with current and future environmental legislation.

As MIS LTD. is located on four separate sites, we are conscious that there is the possibility that the work carried out in our offices could easily have a damaging effect. Therefore we have enforced the following procedures.

At MIS LTD. we are currently striving to become a truly 'paperless office'. Given our twenty-five years of operation this is likely to be a lengthy procedure, to facilitate this we use a network of computers that connect all of our sites together. This network allows internal use of paper to be kept at a minimum; the best example of this is the use of emails and our internal intranet instead of memos. It is unlikely that we will ever be completely paper free and so by recognizing this we reuse as much of our paper as possible. All employees are encouraged to use both sides of the paper when printing and all employees readily have access to paper recycling bins, which are collected and taken away by a reputable recycling group.

In addition to our concerns about our usage of paper, we are sometimes required to make a printed copy of reports for our customers. It is this reason that we choose to recycle the ink cartridges that we use, these are sent to a charity, where they are recycled. The benefits from this are twofold, MIS LTD. benefits because we are fulfilling our responsibility to recycle as much of our waste as possible and the charity benefits from the funds raised by our donations. We are very pleased that we can use our waste to help such charities in attaining their goals.

In addition to managing our waste by reusing and recycling, we also make a concerted effort to use materials that are as environmentally friendly as possible.

MIS LTD. tries to consider our responsibilities from as many different perspectives as possible. This is why we reduce the amount of paper waste by trying to opt out of mailing lists that are not of interest to us. Where possible we encourage our communications with other businesses and individuals to be done electronically.

We also consider the environment with regards to the way in which we provide our employees with facilities; given that we sell drinks in cans to our employees, we felt it was our responsibility to ensure that these aluminium cans be recycled. To enforce this, we have provided our employees with aluminium recycling bins.

We strongly believe in our responsibilities for the environment and so in the past we have invested in LPG company vehicles as an alternative to more conventional fuels that cause more damage. We are currently purchasing more diesel powered vehicles which we can power with biodeisel. This alternative fuel is derived from vegetable oil and is therefore not only much more environmentally friendly but is also a renewable fuel.

To minimize the damage we cause whilst travelling, we always try to ensure that internet and telephone conferencing are used instead and if absolutely necessary then we will 'car share' as much as possible.

It is the nature of our work that we will have to travel to do our work, however to maintain our commitment to the environment we plan to ensure that the routes our vehicles take are the most efficient possible. We are prepared to organize our work with this idea in mind.

Furthermore, we recognised that these solutions are better for the environment but also that they are not actually repairing the damage we do cause. In light of this recognition, the company owns a woodland area. This 2 acre site of broadleaf forest is approximately 4 miles north of our head office in Consett (Grid ref. 084559). This forest has been maintained by the company for the past two decades to offset the damage we cause.

We believe it is this motivation that allows us to ensure the high standard of services that we supply are not at the expense of the environment.

In addition to managing our waste, we also strive to ensure that the materials and resources we use are environmentally friendly. This was a consideration when our head office was constructed. We chose to ensure that the building was not only built in an environmentally friendly manner, but also that the building itself would continue to be efficient and not waste energy.

MIS LTD. firmly believes that the communities in which we work are critical to our environmental strategy and so we try to include the local area as much as possible. This inclusion is so important to MIS LTD. that we have taken it upon ourselves to sponsor not one, but three football clubs (one of which is in Consett itself) and also a local school's project to construct a sensory garden.

As previously stated, MIS LTD. is constantly reviewing it's responsibilities. This is why we have recently been researching into the possibilities for installing renewable energy source on our sites. We believe investing in technologies such as solar and wind power are viable and could provide an additional way in which we can help the environment.

Legal Requirements

Given that we carry out potentially lethal work, there are obviously extremely stringent laws that we must comply with; specifically these include the Environmental Protection Act 1990 and the Pollution Act 1974. We comply with all Health and Safety requirements.

In addition to complying with all the legal requirements associated with our work, MIS LTD. Ltd. feels that a higher code of conduct is essential to protect our environment; as such we are UKAS Accredited and to attain the ISO 17020 and the ISO 17025 standards as well. These standards exceed the requirements for the ISO 9001 standard.

Technology

MIS LTD. firmly believes that we can make use of technology to ensure that we can fulfil our responsibilities to the environment. The best example of this is when we built a network between our four separate sites using the internet; this allowed us to share information and communicate whilst not having to install cables between our sites.

Using this network of computers we have designed an intranet that allows us to distribute documents and communicate information with practically zero waste!

We are willing to put our beliefs in the usefulness of technology so much that we currently fund research programs into technology that may be of use to our business. The main research that we are funding is a new method of detecting asbestos; this would be a non-disruptive method so that the risk of exposing the environment to asbestos fibres will be minimized.

We are also funding research into a new asbestos air extraction system. This revolutionary design will increase the efficiency of removing the asbestos fibres from the air and so greatly reduce the risk to both the environment and individuals.

In addition to researching new technologies, we are also very interested in investing into technologies that are currently widely available. We are looking into equipping our head office with solar panels on the roof or perhaps a wind generator, so that we can provide for at least some of our own electricity in an environmentally friendly way.

We believe that by investing in these technologies we can cut our dependence on external power sources that damage the environment by a significant amount. Taking this course of action will allow MIS LTD. to better support it's other efforts to protect the environment.

Disposal of Waste

It is the nature of the work that we do that means waste disposal is one of our priorities. Whilst we do not actually remove or store large quantities of asbestos, we do collect samples for testing and after metal samples have been tested they too become waste; whilst these are waste products, MIS LTD. does not consider them unusable. We recycle as much of our waste as we can.

MIS LTD. employees are encouraged to consider the possibilities before they print on even a single piece of paper; if there is an electronic alternative then MIS LTD. prefers to use it. Sometime the use of paper is inevitable and so to protect the environment as much as possible, we have paid particular attention to our use of paper.

The first stage in our environmentally friendly use of paper is the paper we purchase; we **only** purchase paper that is produced from a sustainable forest. Doing so ensures that from the start of our work we endeavour to protect the environment.

The second stage is the way in which we use our paper; all of our employees are actively encouraged to print their documents on both sides of the paper as much as possible. This cuts the amount of already environmentally friendly paper we use dramatically.

Any waste paper that contains sensitive information is shredded to comply with the Data Protection Act 1998 and UKAS confidentiality requirements. Finally once our waste paper has been shredded, we send it away to be recycled.

We believe it is this attention to the entire life cycle of our materials, which allows us to have maximum effect whilst trying to protect the environment.

MIS LTD. provides it's staff with a lunch service; here we stock drink cans. As we provide this service, we consider it our responsibility to ensure the waste from this service is managed as effectively as possible. Therefore we ensure that the packaging from the products we sell are as environmentally friendly as possible. In practice this means that we ensure that the cans are made of aluminium, which can easily be recycled into any number of products.

During the material testing service offered by MIS, the materials to be tested are cut into appropriately shaped samples to be tested. This creates metal waste products that are either sent back to the customer, or they are segregated at the source and recycled accordingly.

MIS LTD. also considers it's use of ink to be a way in which we can not only help the environment, but also help a charity. MIS LTD. recently sought a way in which we could dispose of our ink cartridges in an environmentally manner. We found a charity who would not only recycle our cartridges for us, but would also then be able to raise funds for their cause by selling the resulting recycled product on. MIS LTD. is proud to be able to support charities in such ways and will continue to do so.

Upon surveying the waste that MIS LTD. was producing, we decided to opt into a service that would ensure our junk mail would be redirected before reaching us to be recycled. This saved MIS LTD. the trouble of separating the added paper.

Cars

MIS LTD. recognises that by operating a sizable fleet of vehicles we increase our responsibility to ensure that the damage caused to the environment is minimised. In our effort to ensure this we have invested in various technologies to facilitate this. In the past we have converted vehicles to LPG rather than traditional fuels as the emissions from an LPG vehicle are less damaging. Other technologies that we have invested have included satellite navigation systems and route planning software to ensure that the routes we take are the most efficient.

These efforts have greatly reduced our emissions. As a result of this achievement, MIS LTD. will continue to invest in such technologies as part of its continuing effort to protect the environment from the effects of its own vehicles.

In addition to these various technologies that we have invested in, we have considered and utilised various other means to reduce our vehicles' impact upon the environment. These measures have included using telephone and internet conferencing rather than travelling to locations, car sharing and reorganising our schedule as much as is practicable.

We are currently reviewing once again the possible alternative fuels for our vehicles. MIS LTD. will continue to research new methods and technologies to reduce the effect of its fleet on the environment.

Woodland

MIS LTD. will not only attempt to reduce its effects, but will also actively promote the maintenance and improvement of the environment in which we work and live.

As part of our effort to fulfil this responsibility, we purchased approximately two acres of woodland area. We have had to maintain this land slightly to encourage wildlife, however we have limited this to the planting of mixed trees. We believe in encouraging wildlife to the area, whilst restricting our impact on the area.

We are currently considering what possible work we can undertake in conjunction with local groups to preserve this area.

This woodland converts approximately 1.6 tons of carbon dioxide each year. We believe effort combined with our other ventures help to maintain our environment.

MIS LTD. Buildings

MIS LTD. is located on four separate sites; Consett (head office), Newcastle, York and Norwich. We are looking to expand further but realise that we must ensure that in doing so we are not damaging not only the areas we are currently located but also the areas that we would move into. As such the buildings that MIS LTD. works from are all reviewed regularly to ensure that the ways in which we work and the appliances we use satisfy our own and customers expectations. As part of this, we have installed energy efficient appliances, quality thermal insulation, double glazed windows and many other features. We are currently researching into the potential to install renewable energy sources such as solar panels, sun tubes (to use solar energy to heat water) and a wind turbine.

In the early stages of the construction of our new head office, MIS LTD. considered the area with high regard. We decided to build our head office in Consett, this helped and continues to help to regenerate an area that was devastated by the closure of the local steel industry.

Community Spirit

MIS LTD. believes that it should support the communities in which we reside. Our commitment to the community around us is so strong that we have always supported our community and our environment. We recognise that everyone has their own personal responsibility for the area in which they live and as such we are more than willing to support projects that have this goal in mind.

It is this very reason why we currently sponsor not one but three separate football clubs and why we sponsored the construction of a sensory garden in a local school. Two of the football clubs are in Consett and one is in York and the sensory garden was a project that was part of the childrens' education of their responsibilities for the environment. We are proud to say that this garden is still flourishing today.

We strongly believe in community spirit and so we will always endeavour to provide as much as possible for such needs.

Appendix 5



Action Plan for Paul Hughes (MIS ltd)

Sector: Metals and Metal Products **Size:** Medium **Experience:** Beginner

In addition to process related issues, motors and drives and compressed air, ventilation systems are also common in operations of this size and can account for a significant proportion of the energy bill.

	Who?	When?	Tick when Complete			
<p><u>Energy management</u></p> <p>1. Allocate responsibility for energy management to a specific manager or staff member</p> <p>Appoint an energy champion to be responsible for the energy use within your organisation. Their role will involve:</p> <ul style="list-style-type: none"> • looking out for wastefulness • monitoring energy bills • keeping staff informed of the company's energy policy • reporting to senior management on how much money is spent on energy • providing good housekeeping tips for energy savings. <p>The role of an energy champion doesn't need to be a formal or full-time position – it could be incorporated into an existing role. From this first step, you can start to implement a structured energy management programme.</p> <p>New energy champions may find the following guides helpful: Energy Management Pathfinder (GIR063); Focus on energy: A practical guide to reducing energy bills.</p> <p>2. Prepare a list of good housekeeping measures</p> <p>Distribute a list of good housekeeping measures amongst staff. Assign actions required to specific employees and monitor progress. Reporting back is essential. Areas may include use of:</p> <ul style="list-style-type: none"> • lighting • heating • air conditioning • office equipment <p>There should also be the opportunity for staff to provide their feedback. This information should be recorded.</p>						

3. Record energy consumption on a regular basis

Meter readings for all utilities should be recorded on a monthly basis to establish energy consumption and provide early warning of leaks. **Display readings on a graph and compare with the same month of the previous year** to highlight significant variances, plant failure or any waste.

Collection of data provides a basis for **benchmarking** your organisation's consumption. It also enables you to make comparisons with other organisations of similar size, or from the same sector. Sector information is available from the Carbon Trust.

Remember: you cannot manage what you don't measure.

4. Reduce out of hours electricity use

As more small businesses operate on a single shift basis, there are consequently many buildings left unoccupied for vast periods of time, particularly during evenings, overnight and weekends. It is therefore important to switch off appliances that consume electricity outside core business hours, such as:

- vending machines
- extract fans
- pumps
- supplementary heating

Use 7-day time switches where possible to automatically switch off equipment at weekends or during holiday periods. There will be some exceptions (e.g. security lighting and server equipment) that would legitimately remain in operation outside core hours. These actions can significantly reduce your monthly bill.

Financial appraisal

1. Set realistic targets for energy consumption

To save energy companies need to know how much energy they are using now, and set targets for energy use that they intend to aim for in the short and medium term future.

Setting regular realistic and gradually decreasing targets for energy consumption will help to focus attention on inefficient activities and raise the general profile of energy efficiency.

Use data for comparable activities in your sector and identify the best two or three months' performance in energy use by your company. Set regular and achievable targets based on this data. Hold regular target review meetings and plan actions to meet the targets that you set.

<p><u>Motors and drives</u></p> <p>1. Maintain systems to ensure efficiency and reduce costs by 5%</p> <p>Motors will wear as they age causing larger frictional losses. Proper maintenance will prolong the life of a motor and sustain optimum efficiency.</p> <p>eg Poorly aligned direct couplings loose up to 5% efficiency and may result in premature failure of bearings.</p> <p>Replace bearings and seals regularly and ensure lubricants are properly applied. This can save around 5% of the running costs over the life of the motor. <i>Be aware that motor rewinding will cause a decrease in efficiency of 1%.</i></p> <p>For more information see GIL075 Maintenance matters – to the success of your business</p> <p>2. Dusty fans waste money</p> <p>A small factory may save over £40 each year by simply cleaning ventilation fans and shutters.</p> <p>A grime and dust build-up of 3mm on fan blades and shutters can reduce fan performance by as much as 30%.</p> <p>An annual clean up of these items can help improve fan performance and lead to energy savings</p> <p>3. Switch off to save energy!</p> <p>Motors left running when not required waste a significant amount of energy. For example, an 11kW motor which need not run at weekends will waste almost £2,000 of energy per year if left running 24/7. Even under no load, motors can consume as much as 40% of full load power.</p> <p>Regular walk around audits of your site may identify inactive motors. Pay close attention to stirrers running on empty tanks,</p>			

<p>ventilation fans in unoccupied areas and dead-heading pumps.</p>			
<p><u>Process heating and drying</u></p> <p>1. Check boiler settings to improve efficiency</p> <p>Accurate 'air control' is essential to boiler efficiency. Too much air will cool the furnace and carry away heat. Too little air will lead to incomplete combustion and possibly soot.</p> <p>Boiler efficiency can be increased by 1 percentage point for each 15% reduction in excess air (the amount of air in excess of what is theoretically required to completely burn all the fuel) or 40°F reduction in stack gas temperature. This can lead to efficiency improvements up to 5%.</p> <p>A boiler will consume 10% more energy if poorly maintained. Dirty or faulty components will directly affect system efficiency and therefore increase running costs and risk of breakdown.</p> <p>The performance of the whole system should be reviewed annually and replacement parts ordered as necessary. Maintenance should be carried out in line with specific installation requirements - always consult your maintenance engineer.</p>			

The Carbon Trust works with business and the public sector to cut carbon emissions and capture the commercial potential of low carbon technologies. It is an independent company set up by the Government to help the UK meet its climate change obligations through business-focused solutions to carbon emission reduction. The Carbon Trust is grant funded by Defra, the Scottish Executive, the National Assembly for Wales and Invest Northern Ireland.

Whilst we have taken reasonable steps to ensure that the information contained within this document is correct, we give no warranty and make no representation as to its accuracy and we accept no liability for any errors or omissions and nor does the Government.

Appendix 6

MIS LIMITED

IN HOUSE PROCEDURE

Environmental Procedures

To be read in conjunction with any standards referenced herein.

Prepared by: _____
Name - Title

Approved by: _____
Name - Title

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1.0 INTRODUCTION/PURPOSE

This procedure describes the processes used that ensure the Environmental Policy currently employed by MIS Environmental Ltd. Is implemented.

2.0 SCOPE

This Environmental Procedure applies to all employees of MIS Ltd.

3.0 REFERENCES/DOCUMENTATION

MIS Ltd. Environmental Policy
MIS Ltd. Quality Control document

4.0 DEFINITIONS

Environmental Policy	The overall intentions of MIS Ltd. as decided by top management.
Environmental Manager	The person who shall administer environmental procedures on behalf of MIS LTD.
Environment	The surroundings in which MIS Ltd. operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.
Environmental Aspect	Elements of MIS Ltd. activities or products or services that can interact with the environment.
Environmental Impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from MIS Ltd.'s environmental aspects.
Internal Audit	Systematic and documented process for obtaining evidence and

	evaluating it objectively to determine the extent to which the Environmental Policy has been fulfilled.
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5.0 PERSONNEL

The Environmental Manager is responsible for maintenance and enforcement of this procedure. Departmental Managers are responsible for ensuring their departments comply with the Environmental procedures.

6.0 PROCEDURE

6.1 Reduction of waste

Waste reduction is a key step in becoming more environmentally friendly; it removes the necessity to recycle. The following steps outline how MIS Ltd. Will reduce it's waste.

6.1.1 Communications

The use of email and the telephone messaging system will be used in preference to letters or memos being written. Internal messages do not need to be recorded, however a copy of external written communications should be retained on the sender's computer until 3 months after the matter has been resolved.

6.1.2 Mailing lists

Any subscriptions to unwanted mailing lists are to be cancelled by the individual who receives such mail. Before cancelling unwanted mail, the individual should check with their manager for permission to do so.

6.2 Purchase of Resources

6.2.1 Paper

The paper used by the company for external matters is to be produced by a sustainable means. It is the responsibility of the purchaser to ensure this.

For internal communications, draft versions of documents etc. **only** recycled paper is to be used.

It is the responsibility of the administrative staff to ensure that appropriate quantities of both types of paper are purchased and that the paper is distributed to the company appropriately.

The administrative staff are to purchase paper supplies in accordance with Supplier List ENV 047 All suppliers must be approved and on this list.

Purchaser, administration and the user must be aware of the appropriate use of paper and follow these practices.

6.2.2 Fuel

When possible, the individuals who operate the company's diesel powered vehicles will purchase biodeisel. Whilst currently not a widespread resource, this renewable fuel is more environmentally friendly than traditional diesel.

It is the responsibility of Operations Managers to consider situations that may reduce fuel costs. i.e. car sharing and drop off/pick ups.

6.3 Use of resources

6.3.1 Paper

When printing a document, if at all possible, duplex print the document. On certain printers this can be done automatically, others require the user to reinsert the paper into the printer. For instructions on how to duplex print when using a particular printer, see the IT department.

Any unwanted paper which has only been printed on one side should be collected and reused. This paper can be inserted appropriately into the fax machines or used as scrap paper. It is the responsibility of the user to ensure that the paper contains no client information or other sensitive data.

6.3.2 Ink Cartridges

Ink is to be used as efficiently as possible.

Whenever possible, electronic forms of communication and documentation are preferred.

When printing a draft version of a document, use the economy setting on the properties to ensure the use of ink is a minimum. Doing so will also speed the printer up and so waste less time.

6.3.3 Heating

The buildings managed by MIS Ltd. Have been insulated to be as environmentally friendly as possible. The Maintenance Personnel are to ensure that the Heating systems are programmed to take account of the season. These settings and the costs of heating should be reviewed quarterly by the EIC Team.

6.3.4 Electricity

When an appliance is not being used, it is to be turned off.

At night, all appliances that are not being used for overnight work must be turned off, the standby mode is not acceptable, and if practical the appliance should be turned off at the wall. This particularly applies to computers.

Staff should ensure that nobody else is using any equipment before turning it off.

6.3.5 Journey Planning

When undertaking a previously untravelled route in a company vehicle, employees are to utilise the AA's online route planning service to ensure their route is the best available. This service will not only provide a map and detailed directions of every small leg of the journey, but also estimated timings. This service can be found at <http://www.theaa.com/>.

If available, satellite navigation systems should be used to assist in navigating routes.

6.4 Disposal of recyclable materials

6.4.1 Paper

It is the responsibility of the individual disposing any paper that contains confidential information to ensure that the paper is shredded. **Only** confidential material needs to be shredded all other paper can be recycled as it is. Recycling unnecessarily wastes time and electricity.

All of the paper should then be placed in the paper recycling bins provided. These bins will be clearly marked as “Paper only”.

The paper placed in these bins will be collected by the Maintenance Personnel and taken to a suitable recycling facility.

Please note, any unwanted mail and faxes can be recycled.

The paper bins will be clearly marked with “Paper only”.

6.4.2 Aluminium Cans

Once used, aluminium cans should be emptied of any waste liquid and placed in the nearest aluminium-recycling bin. This aluminium will be collected by the appropriate Maintenance Personnel and disposed of in our aluminium skip outside. The provider will collect this and the materials recycled.

The aluminium bin in the office will be clearly marked with “tins” or “cans”.

6.4.3 Ink Cartridges

Once used ink cartridges should be placed in the cartridge-recycling bin located outside Paul Jackson’s office. Please note that at present only HP cartridges can be recycled and so any other cartridges (such as OKI) should not be placed in this bin. If you are unsure about a particular cartridge then please see Environmental Manager for more information.

7.0 ATTACHMENTS

Appendix 7

