

## **SITE REPORTS AND POLLUTION PREVENTION UNDER PPC IN THE SURFACE TREATMENT SECTOR**

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In 2003 the Environment Agency announced a change to the PPC policy relating to site reports. This moved the emphasis to the prevention of any pollution, and only required the setting of reference conditions by the operator when there was a risk of contamination to land being caused. The surface treatment industry was the first PPC sector for which this new policy was applied, and through a collaborative effort between regulators, trade bodies, and consultants a clear message was provided to industry. The leading trade body in this sector is The Surface Engineering Association (SEA), which was particularly pro-active. The setting up of the SEA/Environ PPC Clubs enabled 44 sites to apply for PPC and achieve benefits in terms of reducing the environmental impact, resource efficiencies, implementing Environment Management Systems (EMS's), and the prevention of accidents.

This paper describes an overview of the regulatory framework, the running of the PPC clubs, the constructive implementation of the new site report policy, and the way that this encouraged improvements to be made to prevent any future contamination to land.

### **INTRODUCTION**

In England and Wales the Surface Treatment industry sector was required to apply for PPC (Pollution and Prevention and Control) permits in 2004, and faced considerable difficulties as the sector comprises small plating companies which had not been regulated previously by the Environment Agency. Companies faced a major challenge in not only achieving compliance with PPC, but in many cases simply finding the resources to put together a duly made PPC application. The sector also posed considerable difficulties to the Agency in terms of both interpretation of the regulations and ensuring that this was correctly understood by industry.

In 2003 the Agency devised a sector plan which involved consultation with the leading trade bodies. This identified the key priorities of the sector and also the need for pro-active support to industry, and especially the small companies, which comprised the majority of the sector. The leading trade body, the Surface Engineering Association (SEA), took a pro-active role in development of this sector plan, and subsequently the implementation PPC as whole, through a constructive dialogue with the Agency. Due to the nature of the sector, in terms of the use of aqueous solutions containing significant quantities of metals, it was recognised that there was considerable risk of contamination to land being caused, and this needed to be one of the key issues for the PPC Surface Treatment sector.

## **LEGISLATIVE BACKGROUND AND PPC**

### **EUROPEAN IPPC DIRECTIVE**

The implementation of the European Integrated Pollution and Control (IPPC) Directive<sup>(1)</sup>, has been the first attempt at a common environmental regulatory regime for industry across the member states of the European Union. The Directive is similar in many ways to the previous regulation of industry in the UK under Integrated Pollution and Control (IPC), although there are several key differences. One of the key new aspects within the IPPC regulatory regime is that the operator is required to carry out a site report for the installation. This requirement should not be confused with legislation concerned with historical ‘contaminated land’, and under IPPC the emphasis is to take preventative measures against pollution to ensure that there is no deterioration in land quality during the life of the permit.

### **IMPLEMENTATION OF IPPC IN ENGLAND AND WALES**

The IPPC Directive was implemented in England and Wales through ‘The Integrated Pollution Prevention and Control (IPPC) Act’ and the PPC Regulations SI 2000 no. 1973.<sup>(2)</sup> In relation to preventing contamination to land the Regulations (Sch 4, Part 1) state that:

“The site report ‘shall describe the condition of the site of the installation . . . and shall, in particular, identify any substance in, on, or under the land which may constitute a pollution risk”.

Over the last five years there have been a considerable number of amendments, and these need to be taken into account when referring to the regulations as a whole. These are listed on the Agency web site and also on the regulatory package cd’s which have been issued for each industry sector.

The key requirements for PPC are:

- No significant pollution is caused
- Permits are based on the use of BAT, where:
  - Best – for environment as a whole
  - Available – commercially available and proven
  - Techniques – designed, built, operated, maintained and decommissioned.
- The need for a site report, and to return the site to its condition at permit issue.

Across all PPC industry sectors, the Agency expects that approximately 2700 sites (excluding farming) in the England and Wales will be regulated under PPC. Approximately 1000 of these permits have been issued as of mid 2005. Each of the industry sectors has a specific period (tranche) in which applications need to be made, with the last of these being in 2007. This should then ensure the full implementation of PPC within the timescales set out in the Directive. Guidance for the surface treatment sector<sup>(3)</sup> was also published in 2004 following the normal consultation with industry.

#### **AGENCY'S REQUIREMENTS FOR PROTECTION OF LAND AND THE NEW SITE REPORT POLICY**

In relation to raising awareness of the possible contamination to land, sector profiles relating to land quality were also provided for each industry sector by the Department of the Environment (now part of DEFRA). In the profile for electroplating and other metal finishing works<sup>(4)</sup>, a summary is given of the industry covering its history, location, and the main activities which result in the generation of waste and potential to cause contamination to land.

All the early Part A sectors applying for a PPC permit in the UK, such as paper, and both ferrous and non-ferrous metals, were required to carry out intrusive investigations of their sites as part of their application. These investigations required the setting of a baseline for the condition of the site that the operator would need to return the site to on surrender of the permit. The carrying out of intrusive investigations was required by all sites regardless of the risk of future pollution to land and required considerable time, effort and expense by operators. It was also found that on certain sites with a solid concrete base it was difficult to carry out intrusive measurements.

In 2003 the Environment Agency announced a new site report policy which moved the emphasis from setting baseline conditions in all cases to using risk based decisions to determine appropriate permit conditions to protect and prevent any further pollution to land. The need to conduct intrusive investigations under the new policy is determined on a risk assessment of the likelihood of future pollution to land. This policy was much closer to the original intention of the European Directive, where the emphasis is on prevention. This policy was formalised in the Agency's horizontal technical guidance note (TGN) H7<sup>(5)</sup>, as detailed below.

It should also be noted that within there is a separate section within PPC on accident prevention, which is inherently linked to this new site report policy.

Some sites are also now covered by COMAH (Control of Major Accident Hazards) after the reclassification of Chromium(VI), and again there is a need to be aware of the different aspects of this. In essence COMAH is only concerned with the identification and prevention of major accident hazards, while PPC is concerned with accident prevention as a whole.

#### **PPC IN THE SURFACE TREATMENT SECTOR**

##### **BACKGROUND OF SECTOR AND NATURE OF POLLUTION INCIDENTS**

There are currently in excess of a thousand surface treatment sites in the UK, consisting mainly of metal plating companies, with the vast majority being based in the Midlands.

For almost 200 years Jewellery Quarter in Birmingham has been the centre of this sector, and it was also here that historically the first electroplating of the metals in the world was carried out in the 18th Century. In the 1980's there was an increased recognition of the historical value of the Jewellery Quarter, resulting in many companies and trade bodies, including the SEA, moving back into it.

Most of the surface treatment sites in the UK are small companies, with many being actually smaller than the formal definition of an SME. About 120 of these companies have a treatment tank capacity of over 30 m<sup>3</sup> which required them to apply under PPC. A significant number of these companies are located in specific river catchment areas in the midlands, and historically there has been a large metal content in the discharge to both controlled water and sewer.

During the 1990's some considerable improvements were made by industry in conjunction with both regulators and sewerage undertakers, but there were still some significant accidents resulting in pollution both to land and water. As a response to these accidents, a voluntary code of practice<sup>(6)</sup> was developed jointly by the Agency and the Surface Engineering Association. This was released in 2001, and was well received by industry, resulting in a significant increase in their awareness of the environment. During this period many operators also installed on-site effluent treatment plants which led to a great reduction in the amount of metals discharged to both controlled water and sewer.

With this step change in reducing routine discharges, it became clear that the major risk of contamination of the environment shifted from the routine discharge to those from accidents. From this, it was accepted that accident prevention needed to be one of the key priorities for the implementation of PPC in this sector.

Some specific examples of the incidents that have occurred on surface treatment sites in recent years, which have caused significant pollution controlled water, soil, and groundwater contamination are as follows:

- At a nickel-chromium plating site, leaks of nickel, chromium and acid were discovered to have leaked from poorly sealed drains and a cracked concrete sump over many years. This contaminated the groundwater that was up-gradient of a town supply.
- At a copper and nickel plating facility, several tank valves failed over several years leading to losses of material to the drainage system and adjacent river causing on some occasions small numbers of fish kills. This was largely due to inadequate bunding and poor preventative maintenance. This is a COMAH site, but these issues were not picked up under COMAH as it concentrated only on major accidents and hazards, ignoring these smaller incidents.
- At a chrome and cadmium plating facility, leaks from valves and connection pipes over many years had seeped through the chemical flooring and service conduits into the building foundations and adjacent roadway. These discharges eventually connected with the drainage system and seeped into it, leading to exceedences of cadmium and chrome levels in the storm-water discharge. The area was refurbished

recently and over £300,000 had to be spent on cleaning up the sub-base and soils below the floor slab. The groundwater here had a measured pH of 1.

### OVERALL IMPLEMENTATION OF PPC INTO SECTOR

In mid 2003, a PPC coordinator was appointed for the sector, and more proactive consultation with the leading trade bodies was initiated. The issues outlined in the sector plan were fully recognised in these discussions, and in particular it was recognised by the Agency that this was a sector of small companies which were essentially new to such regulation. As such it was accepted that there was a strong need for clarity.

The following meetings and seminars were held in order to promote the implementation of PPC into the surface treatment sector:

- Autumn 2003 – various meetings between the appropriate leads from the Agency, together with the Scottish Environmental Protection Agency (SEPA), with the SEA and other leading trade bodies, to agree the appropriate implementation of PPC.
- October 2003 – SEA/Environ workshop to promote the implementation of Environmental Management Systems (EMS's) and ISO14001 by operators in conjunction with PPC.
- January and March 2004 – four workshops by Agency to formally launch the PPC Surface Treatment Sector: these being held in Wallingford, Birmingham, Leeds, with an additional later one in Birmingham for those who were unaware of the main ones.
- February 2004 – launch of 'SEA/Environ PPC Clubs' to provide a cost-effective route for operators to make their own application. (It was also made clear that the Clubs were only one option, and operators could use their own consultants or indeed prepare the application themselves).

In each of these meetings it was stressed that *all* aspects of PPC needed to be covered in applications, although it was communicated very strongly that a proportionate approach was needed. In particular it was stressed that in the sector plan the following areas had been identified as high priority:

- Good management systems and accident prevention
- Discharge of metals in aqueous streams from sites.
- Waste handling, storage and disposal, and the efficient use of raw materials.
- The need for pollution prevention under the new Site Report policy.

### THE AGENCY'S POLICY ON SITE REPORTS AND THE NEED FOR PREVENTION

The new Site Report policy was formalised by the Agency in the PPC Horizontal Technical Guidance Note No 7 (TGN H7)<sup>(5)</sup>, which was issued in August 2003.

This new site report was also presented by the Agency at the IChemE conference 'Delivering IPPC' in November 2003, within a session on accident prevention under PPC and COMAH. As such, it was stressed that this policy for preventing contamination

to land is intrinsically linked to accident prevention in relation to both the physical and procedural aspects of this. This new site report policy was implemented formally for the first time within the surface treatment sector, which had an application window of May to July 2004, as described below.

## AGENCY GUIDANCE ON SITE REPORTS, TECHNICAL GUIDANCE

### NOTE (TGN) H7

Under the new Site Report guidance, TGN H7, the Application Site Report (ASR), should include specific details, and for each site the guidance provides a comprehensive list of items which should be included. The following provides a summary of the key aspects:

- a) Identify the environmental setting and pollution history of the installation.
  - Undertaking of a desk-based research and site reconnaissance
- b) Identify any substance in, on, or under the land that could have arisen from materials or produced in the future).
  - The applicant needs to identify all the substances at the installation that, if released, have the potential to pollute soil or groundwater; whether alone or in combination with other substances already in the soil or groundwater. This could be as a result of spills, leaks, failure of tanks or pipelines, or deliberate discharges.
- c) Identify preventative measures that are in place to protect the land.
  - For each of the operational activities (that could result in pollution to land), and associated substances, the Applicant needs to identify and record the pollution prevention measures that are in place to protect soil and groundwater.
  - The principle means of pollution prevention is the careful handling and storage of chemicals, and in particular the three levels of containment:-
    - Primary: for example a drum, vessel, pipe etc containing the substance
    - Secondary: for example bunds, doubled walled vessels etc designed to retain any substance in the event of failure of the primary containment
    - Tertiary: additional measures to contain a spillage, such as oil interceptor, concrete hardstanding etc.
- d) Be sufficient to form the basis of the Operator's Site Protection and Monitoring Programme (SPMP) of impact to land to be conducted during the life of the permit.
  - Assess the effectiveness of the pollution prevention measures and provide a statement on the likelihood of pollution to land. The criteria for determining whether there is 'reasonable possibility' of pollution to land are given below. These are then used for determining the type of SPMP that the operator will need to implement.

### CRITERIA FOR DETERMINING WHETHER THERE IS 'LITTLE LIKELIHOOD' OF POLLUTION TO LAND

If a site has either the bulk storage of any polluting chemicals, or a high volume throughput of polluting substances, then there will be a possibility of pollution. However, if the operator carries out a basic level of measures on the site, then a decision can be made,

as part of the permit determination, on whether there is 'little likelihood' of pollution. The following criteria were developed in TGN H7 to enable this decision to be formalised:

- a) Do preventative measures exist for each of the relevant activities at the installation?
- b) Are the preventative measures adequate to prevent the emission of potentially polluting substances to land?
- c) Does the applicant have NO record of pollution incidents or spills from the relevant activities to be permitted? (See note below)
- d) Are there proposals to conduct integrity testing of preventative measures?
- e) Is there an adequate document management system to demonstrate operator management and competence for the relevant activities?

To satisfy the criteria that there is little likelihood of contamination to land during the future life of the installation, the applicant will have to have answered YES to ALL of these five questions.

Conversely, if the answer is 'NO' to any of these five questions, then it is taken that there is a potential for current or future pollution to occur from the installation.

Note: Question (c) can be ignored if applicant can demonstrate appropriate measures have been undertaken to ensure that future pollution incidents or spills do not occur. This could include necessary improvements to management systems, equipment, plant or processes.

These five questions are expanded in TGN H7<sup>(5)</sup>, and reference is also made to other Agency Pollution Prevention Guidelines relating to the surface treatment sector:

- PPG11: Preventing Pollution at Industrial Sites.
- PPG18: Managing Firewater and Major Spillages.
- PPG26: Storage and Handling of Drums and Intermediate Bulk Containers.

The communication and response of industry in compiling PPC Applications in order to meet these new criteria is described in Section 5.

It was stressed in this sector that these five criteria only provide a minimum requirement for meeting the criteria of little likelihood of future pollution to land, and as such further improvements by operators on sites were encouraged to further decrease the risks. The criteria for these further improvements under PPC would be BAT, as defined above. These aspects of meeting the minimum requirements and then carrying out further on-going improvements were pushed by both the Agency and especially in the PPC Clubs, and are shown within the case studies detailed in Section 7.

### **THE SEA/ENVIRON PPC CLUBS AS A ROUTE TO APPLYING FOR PPC**

These PPC Clubs were based on the well-established concept of 'waste minimisation clubs' which had previously provided significant resource efficiency savings in various industry sectors. These PPC Clubs were set up by the SEA together with the consultants Environ, with an input also provided by an independent water treatment specialist. Three Clubs were set up in England, two in Birmingham and one in Leeds, and an additional smaller scale Club was also run in Scotland.

One of the key drivers for the setting up of the Clubs was a response to the expensive quotations from various consultants to prepare PPC applications for small companies. The clubs were fully supported by both the Agency and SEPA, and it was insured that as well the appropriate leads for the sector. Field inspectors were also present at all of the Club workshops, and in addition to the advice they were able to give, they were also able to learn more about the sector.

The clubs were first formally presented to industry at the seminar organised by the SEA on EMS mentioned above, and then also by the Agency at its own sector launch workshops. The Clubs were also actively pushed by Site Inspectors, and as a result forty-four sites ended up preparing their PPC applications through this route. This amounted to about one third of the sector as a whole. A report on the Clubs was subsequently produced by Environ<sup>(7)</sup>.

#### BENEFITS OF THE SEA/ENVIRON PPC CLUBS

The following benefits were provided to operators who prepared their PPC Applications through the Clubs:

- Low Cost approach for preparing PPC application – with a subsidised cost to SEA members.
- Fully supported by Agency and SEPA, and delivered by Environ, a leading consultancy which already had a track record of preparing applications in the surface treatment sector.
- Club members to receive three one-day support visits to help them prepare their own application.
- Additional support from a separate effluent treatment consultant.
- Inside track on the consultation with Agency on the BAT guidance.
- Arrangement of free waste minimisation and energy efficiency audits provided by the Government's Envirowise and Action Energy Programmes.
- Good practice advice on raw material selection, utilities, waste, and how to make significant cost savings through waste minimisation.
- Option of using lost cost service to provide site reports.
- Club approach allows members to swap experience and learn from each other.

#### MODEL APPLICATION, SITE REPORT AND SITE PROTECTION AND MONITORING PROGRAMME (SPMP)

A key aspect of the Clubs was the preparation of a 'model' PPC application which after approval by the Agency, was provided to the club members to help them write their own applications. As well as the main PPC application, a 'model' Site Report and Site Protection and Monitoring Plan (SPMP) were also prepared. These models were compiled by Environ, for the company South West Metal Finishing. This company was selected for providing the model on the basis that it is a slightly large company that carries out a wide range of processes which were felt to be representative of many of the companies in the sector as a whole.



The draft Model Application, Site Report and SPMP were each reviewed by the Agency, and after incorporating this feedback Environ, was able to provide models which could then be used by the Club members with confidence. It was stressed at the PPC Club workshops that these were 'models', and operators should not blindly 'cut and paste' into their application. By encouraging operators to look at their own site when compiling their applications, emissions were reduced, considerable process efficiencies were achieved, and most importantly, operators responded very positively to need for prevention under the new site report policy.

#### COMMUNICATION OF NEW SITE REPORT POLICY WITHIN THE SEA/ENVIRON PPC CLUBS

The model site report was compiled a few months after the main model PPC application, and in fact this delay was actually due to fact that some improvements were made to the site during this period. It was initially found that the South West Metal site had to make a few improvements, and by ensuring that these were carried out prior to completion of the model site report a very clear message was relayed to the Club members compiling their own sites reports.

In general improvements on sites generally fell into the following categories:

- improvements to bunds,
- upgrading of pipework,
- improved storage of chemical,
- appropriate accident and emergency plans.

It was found that the majority of companies spent around £5 k–10 k on improvements to their sites, with only a few spending considerably high amounts of between £30 k to £60 k. A few case studies are provided below which provide examples of the type of improvements that were carried out on certain sites which provided a good cross-section of the surface treatment sector.

The carrying out of these improvements to sites was found to be hugely beneficial to companies in terms of their own reputation as companies, and in terms of their sales, being able to show customers that they have put considerable effort into environmental improvements. The cost of carrying out intrusive investigations and any remedial measures which may be required, should additional pollution to land occur during the operation of the installations, is also known to be high. As such, it was accepted in this sector that it was more cost effective, and environmentally beneficial, to make the necessary improvements prior to submission of their application. In this way, good use was made of resources in terms of reducing the risk of future pollution to land.

#### ENVIRONMENTAL IMPROVEMENTS AND ENVIRONMENTAL MANAGEMENT SYSTEMS

As part of the emphasis on prevention of accidents causing pollution, it was recognised that environmental management systems could play an important role for operators.

Under the current Agency charging scheme for PPC, an EP OPRA spreadsheet needs to complete comprising the following sections:

- Prescribed and technically linked associated processes
- Releases to air, water, land and quantity of waste
- Location
- Operator performance in terms of site procedures and compliance history.
- Summary and calculation of application and annual subsistence costs

Analysis of the EP OPRA spreadsheet reveals that there are fixed decreases in the cost for operators that site Environmental Management Systems (EMS's), and also when these are certified to standards such as ISO14001. The following costs, presented by Environ<sup>(7)</sup> following consultation with the Agency, show the typical decrease in costs for a typical surface treatment site for three cases:

	Application fee	Annual subsistence fee
Operator with no EMS	£11230*	£5450/yr
Operator with own EMS	£8665	£4205/yr
Operator with EMS certified to ISO14001	£6100	£5450/yr

\*The base line cost is taken as the cost calculated for a typical surface treatment site with an installation containing tanks of between 30 and 60 m<sup>3</sup> surface treatment capacity.

It should be noted that the increases shown here are fixed increases, rather than percentage increases, and so in other sectors where the fees are much higher, the difference of about £2500 is of less significance in relative terms.

As mentioned above, historically there was a significant risk of pollution from this sector, and in addition to the physical measures installed by operators, it was recognised that the use of EMS's could play a significant role in further reducing the incidence accidents. As part of the SEA/Environ clubs, several certification bodies attended and gave presentations to operators on the benefits of an EMS accredited by UK Accreditation Service (UKAS), which was one of the criteria for the ISO14001 to be recognised by the Agency for the charging scheme.

An example is given in Appendix 1 of the way that plating companies can implement appropriate procedures for the carrying out of quarterly preventative checks relating to the potential for causing contamination to land. This example was included in the model SWMF application, which was provided to operators in the SEA/Environ Clubs. The way that this form has been taken and modified by operators to meet the requirements of their own particular site provides a good example of how the Clubs worked.

There was initially some confusion concerning the point at which an operator who was applying for ISO14001 could obtain the credit in terms of the charging scheme, and in order to resolve this a procedure was formally agreed by the Agency and the SEA together

with Environ. This recognised that the certification process of formally obtaining ISO14001 could take several months, and that this process could also be out of the operator's hands. As such it was agreed that operators who formally applied for ISO14001, provided proof of payment of the application fee, and had undergone the initial audit could obtain the savings in their application fee.

Environ reported that only 28% of companies had an EMS before joining the Clubs, and only 14% had ISO14001. A further 69% of the companies implemented an EMS through the Clubs, and 21% of companies gained full ISO14001 before submitting their PPC application. A further 41% made a formal application for ISO14001 prior to submitting their PPC application and as such were able to gain from the reduction in their application fee. Although this resulted in lower application fees coming into the Agency, it was accepted that this lower fee was linked to a better quality application, and that with ISO14001 the application should be processed more easily in a risk-based regime.

It was also found that in this sector many operators found the implementation of ISO14001 not only beneficial in terms of saving money on their PPC applications, but more importantly also in term of their company's reputation. This was linked to being seen as producing a high quality product and also aware of their corporate responsibilities to the environment, which is now increasingly being checked by many customers through the product line.

## **THE DETERMINATION OF PERMITS WITH THE SURFACE TREATMENT SECTOR**

During the application window of May to July 2004, a total of 120 applications were made in the surface treatment sector. 44 of these, comprising approximately one third of the sector, were from operators who had prepared their applications through the SEA/Environ Clubs. These applications were determined by the Agency's Strategic Permitting Groups (SPG's), and nearly all of the permits were issued within the statutory 8 month period.

After the submission of applications within this sector, the consultants Environ compiled a report on the running of the Clubs<sup>(7)</sup>. This report provided an overview of the companies who applied for PPC through this route and also many of the improvements which were made resulting from the PPC application. This report also provided details of the work carried out by operators relating to Site Reports, and how improvements were made to meet the requirements of 'little likelihood of future pollution to land.' The report describes how 97% operators carried out at the minimum level of environmental improvements in order to for them to submit their Application on the basis of 'little likelihood of future pollution to land'.

During the processing of applications it was also found that some operators had only just met the requirements for little likelihood of future pollution to land, and realised that having met the requirements they should still make further improvements. This aspect was important in the sense that the criteria for 'little likelihood of future pollution to land' are not based on having the highest level of protection, but rather a formalised minimum level.

### THE SITE PROTECTION AND MONITORING PROGRAMME (SPMP)

After the determination of PPC applications by the Agency and when the permit is issued, it is specified which type of SPMP will be needed by the operator. The Agency has provided five templates for the site report and the SPMP, which are available in word format on the PPC sector cd's. These templates are as follows:

- H7 Reporting Template 1 – Application Site Report
- H7 Reporting Template 2 SPMP Design with Reference Data
- H7 Reporting Template 3 SPMP Design without Reference Data
- H7 Reporting Template 4 SPMP Reporting Reference Data
- H7 Reporting Template 5 SPMP Reporting Without Reference Data

When the operator has successfully demonstrated that they have met the criteria for 'little likelihood of future pollution to land', they would then use templates 3 and 5. Without reference data they would then need to demonstrate on-going implementation of procedures to ensure that they maintain the effectiveness of pollution prevention measures on their site.

As a minimum the SPMP should satisfy the following:

1. The objectives of the monitoring programme are acceptable: i.e. the design monitors the effectiveness of pollution prevention infrastructure, and provides an early warning of any release of polluting substances to ground or groundwater.
2. The Infrastructure Monitoring Programme demonstrates (e.g. by records) that infrastructure is designed and installed to meet the required or suitable standard e.g. manufacturer's standard, British Standards, Best Available Techniques, Pollution Prevention Guidelines etc.
3. The programme demonstrates that infrastructure integrity is tested and maintained by suitably competent personnel.
4. The programme demonstrate that the infrastructure regime remains fit for purpose by regular testing and review, considering normal, abnormal (e.g. maintenance) and emergency (accidents) scenarios.
5. The assessment procedures are sufficient to identify and act upon increasing levels of pollutants in the ground.
6. The data management procedures will record sufficient relevant data for the purposes of surrendering an application.

### **INDUSTRY CASE STUDIES DETAILING IMPROVEMENTS MADE IN RELATION TO SITE REPORTS**

The following provide an overview of how the new site report policy provided a good incentive for measures to be implemented by operators within the surface treatment sector.

#### **RIMEX METALS (UK) LTD**

This company started working with coloured stainless steel and acid etched designs in 1974, and in 1995 moved to a new site, which was the site that formed their PPC

application. The operator was able to carry out a full survey of both the site itself and the surrounding areas in order to identify any potential routes for pollution to land.

In addition to process tanks, pipework, and pit bunds to capture any spillages onto the factory floor, the company has a designed storage area for process chemicals, acids and alkalis. The site also contains an effluent treatment plant (ETP) and waste storage areas. Only clean rainwater is discharged via the site's surface water drainage system. The risk of fugitive releases to surface water drains has been reduced by locating the ETP into a fully bunded area, with the ability to feed any spillage back into the ETP. The operator was fully able to demonstrate in their PPC application that they met the requirements for 'little likelihood of future pollution to land'; but also included improvements in their application. These related to the storage of liquids, the construction of further bunds, and 'sleeping policemen'. These improvements were formally considered, and following consultation between the operator and Agency, are being fully implemented within a planned programme in early 2006.

The maintenance management system is fully incorporated within the sites EMS, which also ensures that these systems are properly audited at least once a year. The EMS also includes emergency plans, which were fully described within the site's main PPC Application.

#### EC WILLIAMS LTD

This is a typical 'subcontract' electroplating company providing predominately corrosion resistant and engineering finishes applied to customer parts. These electrochemical processes are undertaken using a combination of manual and automatic process lines, in both barrel and jig configurations. The various plants and lines are technically connected through purpose built drains and channels to ensure that all spent chemicals and dirty rinse waters are treated in an effluent treatment plant, which then discharges to sewer.

Each of the plating shops have been constructed using acid resistant floor screeds, drains and channels. This ensures that no liquid can permeate into the soil below and as such any spills will be diverted to the correct drain for subsequent treatment in the effluent treatment plant. The SPMP for this site comprises almost entirely the procedures to inspect and maintain this acid resistant area. To ensure that this approach continues to protect the underlying soil, the factory planned maintenance schedule is included into the site SPMP. Therefore the operator will now check the integrity of the acid resistant screed floor annually (every summer), and also carries out a camera survey of the drains every four years. The operator, either themselves or employing a specialist contractor, will also clean and inspect the three underground pits every four years. During the summer of 2005, an inspection was carried out of one of the pits, which revealed some problems and as a result this one pit was fully relined with a new screed.

#### BG PLATING LIMITED

BG Plating Limited, part of the Anochrome Group, employs about 80 people, and has had premises at Smethwick in the West Midlands since 1986. The company carries out surface

treatment of components, principally of mild steel construction. The work is carried out for a wide range of customers, mainly from the automotive, construction, electronic and engineering sectors. The company holds accreditation to ISO TS16949 and operates an EMS.

BG Plating decided to complete the application with the assistance and guidance provided by the SEA and Environ. BG Plating limited also contracted the services of Ground Investigation and Piling Limited (Wolverhampton) to provide background information and mapping information about the history of the site. This information allowed BG Plating Limited to apply for a non-reference data-based application which meant that there was no need to carry out invasive ground investigation. From the information provided, there had been metalworking and metal finishing on the site and surrounding area since the 1890's, and as such there would be a degree of contamination present prior to any operation carried out by BG Plating Limited. The IPPC application process allowed BG Plating Limited to identify several beneficial improvements that could be made, and these were formalised in the improvement conditions within the PPC Permit issued by the Environment Agency. By late 2005, BG Plating Limited completed several of these improvements, including:

- Review of the chemical storage area and the implementation of a bunding system to 110% of the largest container;
- Installation of a water re-circulation system which has reduced bore-hole water consumption by approximately 40%;
- Installation of an abatement system to remove hydrogen chloride fumes from the bulk hydrochloric acid storage tanks;
- Installation of flow restrictors and sub-water meters on all process line water supplies;
- A full camera investigation to test the integrity of underground effluent pipe-works.

#### DMS CHROMIUM PLATING LTD. (DMS)

DMS employs around 30 people and has operated from premises in Kidderminster, Worcestershire, since 2000, when the new fully automated plating plant was commissioned. The Company carries out surface treatment of plastic components (e.g. chrome plating, gold and other special finishes) for a wide range of customers in the automotive, plumbing, display, dispensing, electronic/electric, and domestic sectors. The company is certified to ISO 9001:2000 and was certified to ISO 14001 on 25th October 2004.

Prior to applying for PPC, DMS recognised that there was a need to improve the site. In 2003 they invested £60 k to concrete the whole outside area to provide an impermeable surface, a special bunded area for chemical storage, including an integral blind sump which can be pumped to the on-site effluent treatment site. The whole site was also securely fenced to prevent vandalism. In addition to the physical measures, the major risks of causing pollution to land from hazardous materials were fully considered by DMS for both normal and abnormal operations. These included hazardous liquid spillage from tanks and during delivery of chemicals, storage or movement around site, and the escape of hazardous waste materials. Procedures were introduced to ensure these spillages did not result in releases to land, ground water, surface water drains, and also to sewer above permitted levels.

These improvements were all fully implemented prior to submission of their PPC application, in which were able to fully meet the requirements of 'no likelihood of pollution to land.' These improvements were recognised in October 2004 when DMS received the SEA Environmental Award.

## CONCLUSIONS

1. The change in policy relating to PPC Site Reports and the prevention of pollution to land, was successfully implemented for the first time within the Surface Treatment sector.
2. The initiative by the Surface Engineering Association in the setting up of PPC Clubs, with the consultant Environ, pro-actively helped the Agency to give a clear message to Industry.
3. Companies looked at their sites prior to compiling of their PPC Applications, and the vast majority carried out work to meet the criteria for 'little likelihood of future pollution to land'.
4. It was understood that these criteria were a minimum standard to be achieved at the point of application, which is used to determine whether or not intrusive measurements would be required. The vast majority of operators were able to meet this, and many then continued with further improvements after receiving their PPC permits.
5. Operators also implemented environmental management systems to ensure that good procedures were adopted along side the physical improvements. Many also found considerable benefits in having these systems being certified to ISO14001.

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### Appendix 1. Typical Form For Quarterly Preventative Maintenance Checks

Visual inspection for condition of the following items in each area:-

- Bunding
- Drainage channels
- Pipework
- Tanks
- Supports
- Ducting
- Motors
- Pumps/Filterers
- Compressed Air

**PREVENTATIVE MAINTENANCE CRITERIA**

1 = Repair immediately  
 2 = Repair within 1 week  
 3 = Repair within 1 month

	Indicate whether Satisfactory (/) or Maintenance Required (1, 2, or 3)										Signed	Date	Comments
	Bunding	Drainage channels	Pipework	Tanks	Supports	Ducting	Motors	Pumps/ Filterers	Compressed Air				
Process tanks and pipework													
Floor inside factory													
Drainage channels in factory													
Chemical store & cyanide store													
Small drum store													
Acid and alkali bulk store													
Effluent treatment plant													
Waste skip area													
Site bunded area													
16m <sup>3</sup> sump													