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Dear Naill

The Australian Sustainable Business Group (ASBG) has been made aware of the Office of Environment and Heritage's *Draft Landfarming, Technical Practice Notes* (the Notes). A number of members have raised concerns about the Notes requirements for unspecified pretesting and monitoring on landfarming operations, which may render many applications uneconomic. ASBG proposes an alternative approach in dealing with bio-degradable hydrocarbons, rather than focusing solely on requirements for landfarming.

The Australian Sustainable Business Group (ASBG) is a leading environment and energy industry representative body that specialises in providing the latest information, including changes to environmental legislation, regulations and policy that may impact industry, business and other organisations. We operate in NSW and Queensland and have over 150 members comprising of Australia's largest manufacturing companies.

ASBG strives to assist regulatory agencies to prepare more efficient regulatory process, with the outcome of achieving practical, low cost solutions to achieve higher environmental outcomes.

This submission will focus on the following issues with the Notes including:

- Use of methods to control fugitive emissions from landfarming
- The Notes potential high costs for gaining approval
- Consideration of economics of alternative treatment methods vs landfarming to achieve best environmental outcomes
- Alternative Landfarming operational parameters

Control of Fugitive Emissions

ASBG considers the focus on fugitive emissions from landfarming practices is disproportionate to the problem that landfarming's Volatile Organic Carbon (VOC) emissions contribute to any air shed. Landfarming in NSW is very small in terms of total mass of VOCs emitted compared to other sources such as motor vehicles, service stations and even cut grass — the fourth largest source. Hence actions to control VOC emissions from landfarms will have minuscule effect on photochemical smog.

Regulatory actions on VOC emissions from cut grass demonstrate a typical double standard in emissions control. Many references demonstrate that once cut, grass emits considerable quantities of VOCs. The Environment Protection Authority (EPA) has indicated that cutting grass is the fourth largest emission source of VOCs in the Sydney Metropolitan area. However, there are no guidelines or technical notes

on how to reduce the VOCs from this common activity. Yet landfarming's tiny mass contributions for VOC emissions are not acceptable to the regulator, but the orders of magnitude larger emissions from other VOC sources without controls are. The issue here is that the Notes create a double standard where two VOC emission sources are treated substantially and differently, because landfarming appears as an easier target to control.

High Cost of Approval

ASBG accepts that abuse of landfarming techniques to volatilize light hydrocarbons should be controlled. But these controls should be sharp, lowest in cost to implement and not be excessively onerous, nor undermine the low cost advantages that good landfarming practice offers compared to other methods available to manage bio-degradable hydrocarbons. Members are most concerned the following statement in the Notes:

If there is uncertainty as to the effectiveness of landfarming in biodegrading the contaminated soils, treatability studies should be undertaken as a means of determining that the degradation is due to biological processes and not to abiotic processes such as volatilization and photodecomposition.

In practice the above strongly suggests EPA will require unidentified and unspecified treatability studies to be undertaken on landfarming processes. ASBG contends this is a very expensive process where each user of landfarming practices will generally need to undertake such studies. The cost and time taken to undertake these studies could render most landfarming project uneconomic, regardless if they do or do not meet any unspecified degradation performance.

The Notes open ended testing and performance process, which determines if a landfarming process can commence, is considered poor regulatory practice. There are many unanswered questions including:

- What is an acceptable level VOC emissions from landfarms?
- How do you measure the amount of these emissions where there is no standard test method available?
- Why is there no distinction between landfarms inside or outside the Sydney and Illawarra air sheds? VOC emissions and photochemical smog is an issue for these two areas, but not the case for the rest of NSW.
- Are there any simple tests which the EPA will accept to determine when VOCs need to be controlled?
- Can these tests be based on a scale basis, where lower simpler methods are used for smaller landfarming practices?

This process provides no certainty and no means in which to modify any landfarming process to meet unknown performances.

If a landfarm is considered by the regulator to require control of emissions, such as control and capture of VOCs, the solutions the Notes offered are in practice vague, and are likely to be uneconomic and highly impractical. Placing a tent or greenhouse structure over a landfarm is fraught with occupational health and safety problems. If high levels of VOCs are present, the enclosure may be classed as a hazardous zone 2 atmosphere. The costs of managing TLV levels, internal temperature, vehicle emissions, flame proof lighting, scrubbing systems and other controls are very high. Very few landfarms would be economic to operate under these conditions. Scrubbing systems are also limited by waste disposal acceptance criteria. Activated carbon over specific concentrations cannot be disposed of to landfill. Incineration of VOC in situ is also very expensive and is likely to raise community opposition. Added to this practice is the need to obtain planning permission for such developments.

Overall the Notes are likely to increase the costs of landfarming to the point where many applications become uneconomic. By only focusing on landfarming there are no alternatives provided, which may also be uneconomic. The environmental consequences of alternatives and no action are not considered.

Alternative Approaches Required

ASBG's preferred approach is to deal with the waste material — bio-degradable hydrocarbons — rather than one specific treatment option — landfarming. A constructive practical approach is for guidelines which deal with the problem of dealing with biodegradable hydrocarbons and consider the range of appropriate technologies available for its treatment. A range of different minimisation, treatment and disposal options should be considered along with the methods economic costs.

Costs of Landfarming vs Other Options Must be Considered

The US EPA states that landfarming has a competitive advantage at \$30/t to \$60/t over alternative technologies. Comparing this to landfilling, if the waste meets acceptance criteria, the landfill levy alone at \$82.20/t exceeds this rate. Management of the hydrocarbon contaminated soils or oil emulsion and sludges as a liquid or hazardous waste would at the least commence at \$400/t and can increase to well over \$1,000 and may require interstate transport.

If the costs associated with testing and or controlling VOC emissions other options such as dig and dump or other thermal processes must be considered. Increasing costs of treatment should be taken into account for remediation activities. If hydrocarbon contaminated soil prices increase even by small amounts, marginal remediation actions will become economically unviable. If landfarming doubles in costs or more many remediations of bio-degradable hydrocarbon contaminated land will not take place. ASBG believes treatment of contaminated land is better than no remediation.

ASBG proposes the following questions for the EPA to consider on this issue including:

- Is it better to have tight landfarming controls and have more contaminated lots not being cleaned up?
- Is it better to have a dig and dump in landfill approach to contaminated soils which would otherwise be landfarmed?
- What is an appropriate balance of environmental risks between control of VOCs from landfarming and its impact on the range of options to the cleanup of contaminated land?

Recommended Approach

For soils contaminated with biodegradable hydrocarbons ASBG recommends the following:

- The EPA develop guide notes for the management of bio-degradable hydrocarbons including non-biological economic viable options which are available across Australia. This will consider:
 - The economics of available options and identification of the top most cost effective options.
 - Process for gaining approval for other options which are not available.
 - Criteria or reference to such criteria for the acceptance for such options.
 - For landfarming as a low cost option:
 - A series of low cost tests be developed to determine specified unacceptable levels of VOCs in soils.
 - Tests and conditions be proportional the scale of the landfarm – small scale landfarming be subject to minimal and low cost commencement criteria.
 - For large landfarms the experience of the owners, contractors or consultants undertaking the set up and management of such a landfarm.
 - Exemption of landfarming from all but the simpler tests in areas outside the Sydney and Illawarra areas.

- These VOC tests start with low cost simple tests for small landfarming operations and increases in cost and complexity as larger landfarms are considered.
- Other environmental controls to manage landfarms including:
 - Stormwater runoff
 - Odour
 - Proximity to neighbours

A first order simple test for unacceptable VOCs in soils may be test for flammable dangerous goods. For example, if the hydrocarbons in the soil emit enough volatile components that the vapours can be ignited, then such soils are possibly too high in VOC to proceed with landfarming.

Another better approach is to have research undertaken to develop a series of test methods before the application of such controls on landfarming. The Notes appear to place the test development process back on potential users landfarming. Development of such tests should be made by reputable sources, rather than require each landfarm proponent to undertake such actions independently and repeatedly.

Summary

ASBG considers the EPA should consider the management of bio-degradable hydrocarbons in a more holistic way. Cost effectiveness of pollution abatement methods are an essential issue which is required and one in which the EPA spends considerable resources investigating, such as for air pollution abatement.

Landfarming is at present a low cost solution to remediate such soils. The EPA must be mindful of the consequences of making a cost effective method unviable due to excessive and costly pretesting and monitoring and specified performance requirements. Alternative methods to landfarming may have their own environmental risks, and if more expensive, will result in the cleanup of some contaminated sites not proceeding. ASBG considers it important from overall an environmental outcomes perspective that controls, testing and performance requirements are kept cost effective for all methods for managing bio-degradable hydrocarbons.

Should you require ASBG to clarify or elaborate on the above matter please contact me.

Yours Sincerely



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Yours Sincerely

A handwritten signature in black ink, appearing to read "Andrew Doig". The signature is fluid and cursive, with a large, prominent loop for the letter 'D'.

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