



Cluett Consulting Newsflash

Topic: **Best Practice for Storage of New Oil**

Particulate and water contamination as well as cross-contamination of oils are recognised as being three of the most destructive forms of damage to lubrication and hydraulic systems, and can result in very costly damage, even loss of warranties. Through our experience in the industry, we have seen that these forms of oil contamination often arise during the handling and storage of new oil. Oil stores are also an area of significant risk to an organisation, in terms of health and safety and the environment.

Through simple, effective management of oil storage and handling, oil contamination can be prevented before it occurs whilst at the same time the environmental and health and safety risks associated with oil stores can be mitigated. Cluett Consulting have identified nine possible interventions for improved management. These are described below.

Bunding

Applicable to: Risk of environmental contamination and compliance obligations

Hazardous substances or substances that may pollute the environment must be stored in such a way that they are prevented from entering into the environment. Bunding (or secondary containment) of oil stores is an effective way to mitigate the risk of oil escaping into the environment.

Recommendation:

1. A general rule of bunding is that it should be able to contain at least 110% of the total volume of oil stored within the banded area (this may differ in your area so make sure to check for the requirements in your area);
2. The latest Local Authority legislation, in certain areas, requires a separation of a bulk diesel tank from the bund wall of at least 1.5 metres;
3. Where banded areas are fitted with a drainage valve, these valves must be kept shut, preferably locked shut, with the implementation of a procedure for both the opening and relocking of the bund drainage valve on completion of drainage management;
4. It is recommended that a “ball-valve” is fitted in preference to a “gate-valve” as this makes it easier to identify whether the valve is open or shut.

Floor

Applicable to: Risk of environmental contamination and compliance obligations

The floor of an oil store should be paved and sealed. Audit observations have observed contamination risks arising in instances when floors are paved with open joints or where multiple concrete slabs with expansion joints are used and the integrity of the seal at joints is not confirmed. Similarly seepage through expansion joints has also been identified as a problem at wash-bays and vehicle servicing areas.

Recommendation:

All joints in banded areas, servicing areas, lubrication bays and wash-bays should be sealed to prevent seepage of oil and/or other chemical substances from entering the ground underneath.

Ventilation

Applicable to: Compliance obligations, Health and Safety

As described in Newsflash titled “[Cluett Consulting Newsflash: Oil contamination](#)”, inhalation of oil fumes can have negative respiratory effects and, where there is a high concentration of oil fumes, may present a fire or explosion hazard. It is, therefore, important that oil stores are well-ventilated to improve fresh-air circulation within enclosed stores.

Recommendation:

1. Cluett Consulting recommend the installation of ventilation aids such as a “Whirlybird” installed in the roof of the oil and/or chemical store;





2. To prevent dust entry to the store, windows or air vents should be fitted with an effective dust filter. Maintenance and cleaning of these filters must be scheduled and implemented.
3. As a minimum standard, all electrical installations within the storage area must meet “flash-proof” requirements.

Storage of filters, oil-jugs, funnels and pumps

Applicable to: Risk of contamination of oil

An often overlooked source of dust and cross-contamination of “oils” is through the use of contaminated oil-jugs, funnels and pumps that are used during the transfer of oil. During our site Audits, we have found that this equipment is often left uncovered and, as such, may be subject to dust contamination (they often feel gritty to the touch). If this equipment is used without being cleaned, as they generally are, that dust or grit has the opportunity to enter oil and hence the engine, gear-box or hydraulic system of equipment.

Recommendation:

1. Cluett Consulting recommend that this oil-related equipment is protected from dust either through storage in a sealed cupboard or a dust-free environment, or through being covered when not in use;
2. All equipment must be cleaned prior to use so as to reduce the risk of dust or cross-contamination;
3. A procedure may be implemented that, prior to use, this equipment is wiped clean or treated in another way to clear it of dust.

Pumps

Applicable to: Risk of contamination of oil

Our Audits have noted a number of instances where single pumps are utilised for the transfer of multiple types of oil or other fluids. These pumps are often removed from a container of oil and left to drain on a drum or other surface within the store. This practice may result in contamination of new oil by particulate matter settling on the pump pipe or nozzle, or an equally serious contamination may also occur from cross-contamination of oils or other substances, such as anti-freeze through the use of that pump or oil-jug across different oils. This resultant cross-contamination of oils may have negative consequences for equipment life and warranty.

Recommendation:

1. That the oil supply contract makes provision for the supplier to supply individual pumps for each type of oil supplied;
2. That each pump and jug is colour coded for use with a corresponding oil so as to avoid the possibility of cross-contamination between oils or other substances;
3. Oil handling procedures be reviewed and, where necessary, revised with the specific purpose of the prevention of oil contamination.

Storage of lubricants in the open

Applicable to: Risk of environmental contamination, compliance obligations, risk of contamination of oil

So far, focus has been on oil that is stored within a covered, bunded oil store, however in some instances oil containers may need to be temporarily stored in the open. Where outside storage is necessary the following storage principles should be implemented.

Recommendation:

1. Storage must be adequately bunded so as to prevent possible pollution of the environment;
2. Storage, in South Africa and particularly south of the Tropic of Capricorn, should ideally be on the more shady, southern side of a structure to keep the container in the shade;
3. The container should be stored at an angle, for example with a brick underneath one side, to tilt the container such that the openings on the top of the container will be kept clear of any standing water or other substance;
4. The container is sealed tightly to prevent the entry of (moist) air, water and other possible contaminants from entering the container during periods of expansion and contraction as a result of fluctuating temperatures;
5. Care should be taken to ensure that all rainwater, especially from an adjacent roof, should be prevented from entering the bunded area or falling on the top of the container.





Responsible person

Applicable to: Compliance obligations

Our Audits have confirmed that the best managed Oil Storage and Handling facilities are those where an individual or individuals have been assigned as the person/s responsible for the management of the facility/s. This is equally applicable to other site areas including the salvage area, waste storage area, used oil storage area, store-rooms, wash-bays and sediment and oil separators.

Recommendation:

1. Responsible person/s be appointed for the management and care of sensitive areas such as new oil storage, diesel storage, used oil storage, waste storage etc.
2. Where such appointments have been made that they enjoy the support of management.

Our observation as Auditors confirms corresponding high standards across these facilities.

Additional

Safety Data Sheets ((M)SDS)

Applicable to: Risk of environmental contamination, compliance obligations and Health and Safety

Safety Data Sheets (SDSs) are required to be located within easy access of where a hazardous substance is stored or used. All employees working with, or who may come into contact with, these substances must receive appropriate training on the substance and its safe handling and disposal in accordance with the SDS.

Recommendation:

It is recommended that:

1. Applicable SDSs are stored in hardcopy in a mounted pocket, or file, as close to the point of storage and/or use of the respective materials as is possible - bearing in mind easy access in the event of an emergency;
2. Additional copies of the SDS be provided to the SHE Representative responsible for the area, with a Master Copy being kept in the Administration office's SHE Management System documentation;
3. SDS documentation must be neat and well-maintained with the most up-to-date copy, provided by the supplier of that particular substance, being on-hand;
4. Storage of the material be finalised after the completion of a Risk Assessment that includes an assessment of compatibility of the material with other possible materials that may be stored together;
5. Affected employees receive appropriate training on the materials and SDS;

Amount of oil stored on site

Applicable to: Risk of environmental contamination, compliance obligations, cost

Audits across the industry have noted significant differences in the volumes of oil stored for use at respective operations. For example, some medium-sized operations have as many as 25 by 210 litre drums of oils stored in the oil store (5250 l) whilst a similar sized operation may hold stocks of up to 10 such drums (2100 l). Both operations will be within 30km of an oil supply depot. The cost of acquisition, storage and associated risks need to be assessed carefully by the 'mega-storage' operations.

Recommendation:

Oil is an expensive commodity. It is recommended that oil storage volumes be reviewed so as to limit the quantity of oil stored to the minimum required to run the operation efficiently

Safety equipment

Applicable to: Risk of environmental contamination, compliance obligations, Health and Safety

The appropriate safety equipment, such as fire extinguishers, and PPE should be located where hazardous substances are stored, handled or used and these must be adequate, maintained and monitored.

Recommendation:

1. A well-informed Risk Assessment that includes compliance obligations should be conducted at all liquid chemical and hazardous substance storage areas with a view to the identification





of necessary emergency equipment that may be necessary in the event of an incident or accident;

2. The Risk Assessment includes emergency exit routes and safe assembly areas;
 3. For chemical substances and electrical installations it is essential to ensure that no water is used to extinguish the fire. Sufficient Dry-Powder or CO₂ extinguishers should be available to contain the fire until Emergency Services arrive.
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