A Guide to Good Operation and Maintenance Practices of Dry-Cleaning Machine

環境保護署
Environmental Protection Department

Dry-cleaning machine operation using perchloroethylene (PCE) as dry-cleaning agent can be a source of PCE emissions. Excessive PCE emissions affect not only the environment but also the health of machine operators in the workplace. The guide provides a general guidance on the proper operation and maintenance of dry-cleaning machines to laundry owners and machine operators who can contribute to reducing process emissions from dry-cleaning effectively. For advice specific to the machine, please consult the machine suppliers or relevant professionals.

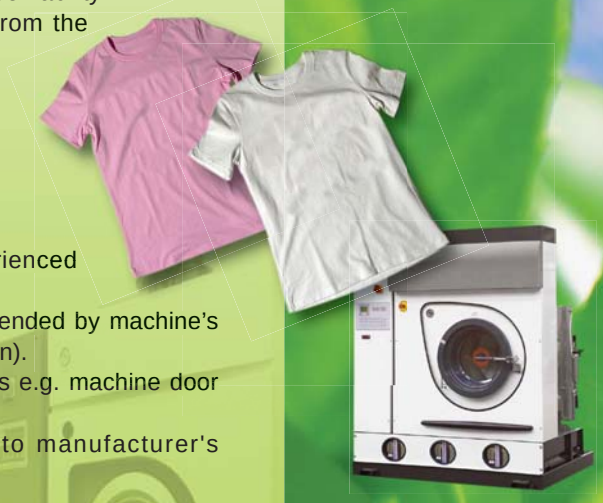
Importance of Proper Operation and Maintenance

The Air Pollution Control (Dry-Cleaning Machines) (Vapour Recovery) Regulation has provisions to control the process emissions from dry-cleaning. With effect from 1 November 2008, all dry-cleaning machines shall be type-approved machines, or machines modified and certified to meet the specified standards in accordance with the Regulation. These machines should be equipped with refrigeration system and carbon adsorption unit to recover most of the PCE without venting it to the atmosphere.

Improper operation of dry-cleaning machine, for example, tampering the pre-set programmes, may result in excessive PCE emissions. In addition, even the best of machines will deteriorate over time. Good maintenance of dry-cleaning machine is important to maintain the performance of PCE recovery systems at its rated level, and hence, to reduce the residual PCE emissions. After all, proper operation and maintenance help keeping the operating cost down.

Good Operation Practices

- Use type-approved machine. Modified machine must comply with the regulatory requirements.
- Always follow machine manufacturer's specification and recommendations in operating the machine.
- Operate the machine under automatic mode using pre-set operation programmes to ensure proper settings on drying temperature, drying time and deodorizing time etc.
- Choose different pre-set programmes for different garment materials and loadings in accordance with manufacturer's operating instructions.
- Avoid operating the machine under manual mode except for maintenance purpose.
- Ensure the refrigeration system functions normally to condense the PCE vapour efficiently.
- Ensure the carbon adsorber is not bypassed to adsorb the residual PCE before opening the machine door.
- Carry out carbon regeneration process according to manufacturer's recommendations (typically not more than 20 to 30 dry-cleaning cycles) or when abnormal smell is detected from the materials after dry-cleaning. The adsorption efficiency reduces along with the number of dry-cleaning cycles. Regeneration of activated carbon recovers the PCE adsorption ability.
- Close the machine door immediately after transferring materials to or from the machine. Keep the machine door closed at all other times.
- Never vent or release the PCE laden air in the drum to the atmosphere.
- Store and handle PCE solvent and wastes properly.



Good Maintenance Practices

- Regularly monitor the refrigeration system to ensure it functions efficiently.
- Carry out regular checking on the activated carbon adsorber by experienced technicians.
- Replace the activated carbon before it loses its rated function as recommended by machine's manufacturer (typically at least once a year under normal operational situation).
- Inspect the dry-cleaning system components regularly for perceptible leaks e.g. machine door gasket, storage tanks and associated piping etc.
- Carry out routine maintenance of system components according to manufacturer's recommendations.

Further Information

For further information, please contact EPD's Hotline at (852) 2838 3111 or visit EPD's website at www.epd.gov.hk.

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乾洗機良好操作及維修指南

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以四氯乙烯作為乾洗溶劑之乾洗機，在其運作過程之中可能會排放四氯乙烯。過量的四氯乙烯排放不但會污染環境，還會影響工作場所內乾洗機操作人員的健康。本指南旨在為乾洗場擁有人及乾洗機操作人員提供乾洗機之一般性操作及維修指引，以便他們有效地減少在乾洗過程中釋放四氯乙烯。對於個別型號的乾洗機，請徵詢乾洗機供應商或有關專業人員的意見。

適當操作及維修之重要性

《空氣污染管制 (乾洗機) (汽體回收) 規例》列明相關條例規管乾洗過程中排放四氯乙烯。由2008年11月1日起，所有乾洗機必須為已核准型號；或已改裝及驗證為符合規例訂明之標準。這些乾洗機需配備冷凝系統及活性碳吸附裝置回收大部分之四氯乙烯汽體，以防止在大氣中直接排放。

不適當地操作乾洗機 (如更改預設乾洗程式) 會導致過量的四氯乙烯排放。此外，即使最好的乾洗機其性能也會隨著使用時間而衰減。良好地維修乾洗機對於保持汽體回收系統能夠在額定效能下運作，從而減低殘餘四氯乙烯之排放是極為重要。畢竟，適當地操作及維修乾洗機亦能有效降低運作成本。

良好的操作實務守則

- 使用核准型號乾洗機。若使用已改裝之乾洗機則需符合有關法例的要求。
- 操作乾洗機時必須依從乾洗機製造商的規格及建議。
- 使用自動模式之預設乾洗程序操控乾洗機，以確保設定適當的運作參數 (如乾衣溫度、乾衣時間及除臭時間等)。
- 根據乾洗機製造商的操作指引，使用不同的預設乾洗程序處理不同的衣物質料及衣物負荷。
- 除了維修或測試外，應盡量避免使用手動模式操控乾洗機。
- 確保冷凝系統運作正常，有效地冷凝及回收四氯乙烯汽體。
- 在開啟乾洗機門之前，確保活性碳吸附器正常運作並未被繞過，以去除滾筒內之殘餘四氯乙烯汽體。
- 根據乾洗機製造商的建議 (一般在不多於20至30次乾洗程序後) 或在發現衣物在乾洗後仍帶有異常氣味時，進行活性碳再生程序。吸附器之吸附效能會隨著乾洗次數而衰減，執行活性碳再生程序可恢復其吸附四氯乙烯之能力。
- 從乾洗機放進或拿出衣物後應立即關上機門。其餘時間應保持機門緊閉。
- 不要排出或釋放滾筒中的四氯乙烯汽體至四周空氣中。
- 適當地儲存及處理四氯乙烯溶劑和其廢物。

良好的維修實務守則

- 定期檢測冷凝系統，以確保系統有效地發揮其功能。
- 定期由有經驗之技術人員檢查活性碳吸附器。
- 根據乾洗機製造商的建議，在活性碳吸附器失去其額定效能之前更換活性碳 (於正常運作條件下，一般每年最少更換一次)。
- 定期檢查乾洗機之部件有否洩漏跡象，如門縫膠邊、溶劑儲存缸及相關喉管等。
- 根據乾洗機製造商的建議定期維修乾洗機各部件。

更多資料

如欲查詢更多資料，請致電環保署熱線 (852) 2838 3111；亦可瀏覽環保署網頁 www.epd.gov.hk。

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