



INTERNAL AUDIT DIVISION

REPORT 2015/107

Audit of waste management in the
United Nations Operation in Côte
d'Ivoire

Overall results relating to the effective
management of waste in the United Nations
Operation in Côte d'Ivoire were initially
assessed as unsatisfactory. Implementation
of two critical and three important
recommendations remains in progress

FINAL OVERALL RATING: UNSATISFACTORY

29 September 2015

Assignment No. AP2014/640/08

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AUDIT REPORT

Audit of waste management in the United Nations Operation in Côte d'Ivoire

I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of waste management in the United Nations Operation in Côte d'Ivoire (UNOCI).
2. In accordance with its mandate, OIOS provides assurance and advice on the adequacy and effectiveness of the United Nations internal control system, the primary objectives of which are to ensure: (a) efficient and effective operations; (b) accurate financial and operational reporting; (c) safeguarding of assets; and (d) compliance with mandates, regulations and rules.
3. The Engineering Section in the Office of Mission Support was assigned the overall responsibility for managing waste in UNOCI. The Facility Management Unit was responsible for inspecting and managing waste collection and disposal sites, and the Construction and Building Management Unit for constructing and managing waste disposal infrastructure and monitoring wastewater treatment plants. The Chief of Mission Support designated an Environmental Engineer, who was a National Professional Officer in the Planning and Design Unit of the Engineering Section, to monitor waste management activities and ensure compliance with the Mission's environmental policies and guidelines. The Mission also had 33 waste management focal points responsible for raising waste management awareness, identifying waste management issues and monitoring the implementation of waste management recommendations in their respective sections, units and contingents.
4. The Facility Management Unit was headed by a Facility Manager at the FS-5 level who reported to the Head of the Planning and Design Unit at the P-3 level. The Unit had six authorized posts, comprising one international staff, four national staff and one United Nations volunteer. The Construction and Building Management Unit was headed by a staff at the P-3 level who reported to the Chief Engineering Officer. The Unit had 15 authorized posts, comprising 2 international and 13 national staff. The operational budgets for the management of wastewater and solid waste for fiscal years 2013/14 and 2014/15 were \$8 million and \$6.5 million respectively.
5. Comments provided by UNOCI are incorporated in italics.

II. OBJECTIVE AND SCOPE

6. The audit was conducted to assess the adequacy and effectiveness of UNOCI governance, risk management and control processes in providing reasonable assurance regarding the **effective management of waste in UNOCI**.
7. The audit was included in the 2014 risk-based work plan of OIOS because of the operational, health and reputational risks relating to the management of waste in UNOCI.
8. The key control tested for the audit was regulatory framework. For the purpose of this audit, OIOS defined this key control as the one that provides reasonable assurance that policies and procedures: (a) exist to guide the management of waste in UNOCI; (b) are implemented consistently; and (c) ensure the reliability and integrity of financial and operational information.
9. The key control was assessed for the control objectives shown in Table 1.

10. OIOS conducted the audit from March to June 2015. The audit covered the period from 1 July 2013 to 31 May 2015 and focused on the management of wastewater and organic waste. The audit team visited 31 mission locations (including 24 police and military camps and 9 waste disposal sites in Abidjan, Daloa, Bouake and Yamoussoukro) to assess the Mission’s waste management practices.

11. OIOS conducted an activity-level risk assessment to identify and assess specific risk exposures, and to confirm the relevance of the selected key control in mitigating associated risks. Through interviews and analytical reviews, OIOS assessed the existence and adequacy of internal controls and conducted necessary tests to determine their effectiveness.

III. AUDIT RESULTS

12. The UNOCI governance, risk management and control processes examined were initially assessed as **unsatisfactory**¹ in providing reasonable assurance regarding the **effective management of waste in UNOCI**. OIOS made five recommendations to address the issues identified. UNOCI needed to: (a) assign adequate resources to inspect and monitor waste disposal practices; (b) implement adequate waste management procedures and adequately train responsible staff; (c) install collection bins and storage containers with adequate capacity; (d) ensure periodic waste management reporting to senior management; and (e) take steps to raise the awareness of Mission personnel on waste management practices.

13. The initial overall rating was based on the assessment of key control presented in Table 1. The final overall rating is **unsatisfactory** as implementation of two critical and three important recommendations remains in progress.

Table 1: Assessment of key control

| Business objective | Key control | Control objectives | | | |
|---|----------------------|------------------------------------|--|------------------------|---|
| | | Efficient and effective operations | Accurate financial and operational reporting | Safeguarding of assets | Compliance with mandates, regulations and rules |
| Effective management of waste in UNOCI | Regulatory framework | Unsatisfactory | Partially satisfactory | Partially satisfactory | Unsatisfactory |
| FINAL OVERALL RATING: UNSATISFACTORY | | | | | |

Regulatory framework

Action was required to discontinue discharging untreated wastewater into the local environment

14. The Department of Field Support (DFS) instructions on wastewater management require UNOCI to dispose of untreated wastewater through piped connections to a local communal treatment center or deliver it to municipal sewage collections sites. The Department of Peacekeeping Operations

¹ A rating of “**unsatisfactory**” means that one or more critical and/or pervasive important deficiencies exist in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.

(DPKO)/DFS Environmental Guidelines require UNOCI to segregate wastewater from solid waste and secure waste disposal sites. UNOCI Waste Management Guidelines require the Facility Management Unit to regularly conduct no-notice inspections of waste disposal sites to ensure that waste is dumped at authorized sites and does not pose any environmental risks.

15. UNOCI installed 23 wastewater treatment plants for onsite wastewater treatment and had several waste infrastructures, including 120 septic tanks and 45 soak pits. UNOCI had three contractors for the collection and disposal of garbage waste and two contractors for the collection, treatment and disposal of septic waste.

16. Visits to 31 locations, including observation of activities at 12 wastewater treatment plants and 9 sewage and garbage disposal sites, indicated that in 28 locations UNOCI discharged untreated blackwater² (from leaking ablution units and defective wastewater pipes) and greywater³ (from kitchens, bathing, car washing, and laundry) into open drains or gutters, which flowed into ponds, farmlands and private properties. Additionally, in some locations, UNOCI contractors deposited untreated wastewater in unauthorized open and unsecured sites.

17. The above conditions resulted as UNOCI did not dedicate sufficient resources to monitor and oversee waste disposal practices at Mission locations. The Facility Management Unit also did not conduct no-notice inspections outside of Abidjan to observe contractors' collection and disposal activities for appropriate action, citing insufficient knowledge of the process. Apart from the end-of-contract performance evaluations, the Facility Management Unit did not conduct quarterly performance evaluations of waste contractors, a requirement of the contract, as the Contract Management Unit had not reminded them of their responsibility in this matter.

18. The above conditions exposed Mission personnel and the local population to increased health risk and UNOCI to environmental and reputational risks. Also, due to the lack of quarterly performance evaluations and inspections of contractors' disposal practices, UNOCI was unable to identify and take corrective action on unsafe waste collection and disposal practices by the contractor.

(1) UNOCI should assign adequate resources to: (a) inspect waste disposal practices and monitor and report on the adequacy of these practices by UNOCI and contractors to ensure proper and compliant practices are being followed at all sites; and (b) ensure that quarterly performance evaluations of contractors are conducted and documented.

UNOCI accepted recommendation 1 and stated that the Engineering Section had recently recruited an Environmental Officer and an Environmental Engineer who had started: conducting regular inspections of all UNOCI sites; and coordinating with the appropriate sections, units and contingents to ensure compliance with environmental practices. Recommendation 1 remains open pending receipt of evidence that: (a) periodic inspections of waste disposal practices are being conducted and properly reported; and (b) quarterly performance evaluations of contractors are regularly done and documented.

Wastewater treatment plants were not effectively managed and wastewater infrastructure was not maintained

19. DFS instructions require UNOCI to regularly inspect and maintain wastewater treatment plants and keep adequate records of the inspections conducted. The DPKO/DFS Environmental Guidelines

² Black water is water containing fecal matter and urine.

³ Grey water is waste water generated from domestic activities such as laundry, dish washing and bathing

require UNOCI to regularly monitor and test the quality of treated wastewater effluent. The manufacturer's operating manual for treatment plants requires: (a) regular testing of the quality of treated water against established parameters, including biological and chemical oxygen demand, turbidity, free ammonia, ammonium ion, total phosphorus, dissolved oxygen, acidity/alkalinity and total suspended solids; and (b) inspection, maintenance, cleaning and replacement of specific parts on an annual/biannual basis or after a specified number of operational hours.

20. Visits to 6 of 12 locations with wastewater treatment plants indicated that UNOCI did not maintain records on whether it had: (a) inspected the rings and sealing yearly or at 3,000 hours; (b) inspected bearing and cabling biannually or at 6,000 hours; (c) cleaned the equalization tank biannually; (d) cleaned the membrane at least once a year; and (e) replaced the ultra violet tubes after 9,000 hours of operation. At the time of the audit: one plant was not operational due to lack of parts, and six other plants did not have critical parts, such as mechanical pumps, sensors and valves.

21. UNOCI did not have a laboratory equipped for testing the established quality indicators of the treated water. As a result, UNOCI used a vendor on two occasions (January and October 2014) to test a sample of the treated water in 3 of the 12 wastewater treatment locations. A review of the sample results for the three locations showed that the vendor only tested the free ammonium and acidity/alkalinity parameters. Other parameters, such as the biological oxygen demand, chemical oxygen demand, total suspended solids, turbidity, ammonium iron, total phosphorus and dissolved oxygen were not tested. Due to the lack of systematic testing and the non-testing of critical parameters, UNOCI continued to reuse untested water for irrigation or discharge it into the local environment.

22. Further, the UNOCI Waste Management Guidelines require the Facility Management Unit to ensure that septic tanks are adequate and in good condition. The Guidelines also require wastewater from kitchens to pass through grease traps before it was discharged into a soak pit.

23. Visits to 31 locations indicated that at 27 locations, septic tanks were not properly maintained as tanks were cracked, full of waste, uncovered or improperly covered and in some cases overflowing with wastewater. Garbage was also thrown on top of tanks, and roots from trees and shrubbery grew above tanks. At 29 locations, kitchens had no grease traps to filter the greywater before it was discharged into the disposal system.

24. The above conditions resulted as UNOCI did not:

- Assign clear roles and responsibilities, and implement coordination and monitoring mechanisms within the various engineering units and waste management focal points on the overall management of wastewater activities and inspection of wastewater infrastructures. For example, the Construction and Building Management Unit was responsible for constructing and managing waste disposal infrastructure and monitoring wastewater treatment plants. At the same time, the Environmental Engineer in the Planning and Design Unit was responsible for the overall monitoring of waste management activities. Also, waste management focal points had never formally met to liaise with the Environmental Engineer and to coordinate their waste management activities; and
- Ensure that plant operators were properly qualified or trained to operate the plants. For example, the plant operator in the UNOCI Anonkoua Koute camp responsible for operating seven plants had not been trained. Additionally, in Yamoussoukro, the operator was unable to identify parts that needed to be replaced for a plant that was out of order. Also, interviews with 15 of 45

Mission personnel directly involved in waste management activities indicated that none of them received training on the effective management of waste.

25. The use of untested wastewater for irrigation or discharge into the local environment, and poor maintenance of wastewater infrastructure exposed staff members and the local population to health risk and UNOCI to environmental and reputational risks.

(2) UNOCI should implement procedures and provide training that ensure: (a) assigned waste management responsibilities are clear; (b) wastewater treatment plants, septic tanks and other wastewater infrastructures are properly operated, inspected and maintained; and (c) treated wastewater is tested as meeting internationally recognized standards prior to reuse or discharge into the local environment.

UNOCI accepted recommendation 2 and stated that the Water and Sanitation Unit started training wastewater treatment plant operators at the Anonkoua Koute camp in August 2015, and training of operators in the sectors would be completed by 31 October 2015. The maintenance of septic tank covers and other wastewater infrastructures was in progress and would be completed by 30 November 2015. Recommendation 2 remains open pending receipt of evidence that procedures have been implemented and training provided to ensure: (a) assigned waste management responsibilities are clear; (b) effective management of wastewater treatment plants and other wastewater infrastructures; and (c) proper testing of treated wastewater.

Segregation and storage of solid waste needed to be improved

26. The DPKO/DFS Environmental Guidelines require missions to segregate: waste at points of generation based on their characteristics; and solid waste into bio-degradable organic waste and non-bio-degradable for recycling. The UNOCI Waste Management Guidelines also require the Facility Management Unit to ensure that solid waste is adequately stored in garbage containers that are installed on concrete pads to prevent any contact with runoff water and contaminated soil.

27. Visits to 31 locations showed that Mission personnel were not segregating bio-degradable organic waste from recyclable inorganic waste such as plastics, paper and metals. Also, in all locations, there was overflow of garbage as waste collection bins/storage containers were inadequate to store the waste generated. Waste storage containers: were not installed on concrete platforms, leaked contaminated runoff water, and/or were open or had no lids. Also, in one location, a contingent was depositing its solid waste outside the camp due to the lack of adequate storage containers.

28. The above resulted as UNOCI did not inspect and take action to ensure that waste collection bins and storage containers were adequate and properly maintained at all location sites, and had not implemented procedures to enforce the requirement to segregate solid waste at points of generation. Inadequate segregation and storage of waste increased the risk of environmental contamination.

(3) UNOCI should install collection bins and storage containers with adequate capacity in all mission locations and enforce the requirement on the segregation of all waste at points of generation.

UNOCI accepted recommendation 3 and stated that it had completed an assessment for additional collection bins and storage containers in each camp and a request for the acquisition of bins and containers would be made in fiscal year 2015/16. The Environmental Unit, in coordination with the Contingent-owned Equipment Section, would sensitize contingents on waste segregation

requirement during regular field inspections of UNOCI sites. Recommendation 3 remains open pending receipt of evidence that collection bins and storage containers with adequate capacity have been installed in all locations, and all waste is being segregated at points of generation.

Environmental reports were not prepared

29. The UNOCI Environmental Action Plan requires: (a) the Facility Management Unit, Property Disposal Unit, Water Unit, Electrical Unit and Fuel Unit to prepare and submit monthly environmental reports to the Environmental Engineer; and (b) the Environmental Engineer to prepare and submit an annual environmental report to the Chief of Mission Support. However, interviews with waste management personnel showed that the required units and the Environmental Engineer did not prepare the monthly and annual reports respectively. As a result, Mission management was not fully informed of environmental and waste management issues to ensure appropriate action. This was due to the absence of an Environmental Engineer to ensure that reports were regularly prepared.

(4) UNOCI should take steps to ensure periodic waste management reporting to senior management is conducted.

UNOCI accepted recommendation 4 and stated that waste management quarterly reports would be provided to senior management and there would be regular follow-up to ensure that the targets in the Environmental Action Plan were implemented. Recommendation 4 remains open pending receipt of evidence that periodic waste management reporting to senior management is being conducted.

Waste management awareness programme was not effectively implemented

30. The DPKO/DFS Environmental Policy requires UNOCI to provide environmental and waste management briefing to staff members and contractors during mandatory induction training. The UNOCI Waste Management Guidelines and Environmental Action Plan require the Mission to implement a waste management awareness programme for all staff.

31. A review of training records confirmed that effective December 2013, UNOCI included an environmental and waste management briefing in its mandatory induction training programme. However, UNOCI did not systematically deliver the briefing to all staff members. For instance, responses to an OIOS survey from 23 (44 per cent) of 52 personnel who joined the Mission after December 2013 reported that: (a) 22 did not receive environmental/waste management briefing during their induction training; and (b) 21 did not receive any waste management awareness information.

32. The above resulted as the position of Environmental Engineer, assigned the responsibility for overseeing the Mission's environmental issues, was vacant from April 2014 to July 2015. Also, because of this gap in resources, UNOCI did not take appropriate actions to raise the awareness of Mission personnel on waste management practices. To partly address the shortfall in environmental expertise, UNOCI hired an individual contractor in October 2014. However, during the period of the audit, the lack of dedicated resources resulted in poor waste management practices by staff members, especially military and police contingents.

(5) UNOCI should take steps to raise the awareness of Mission personnel on waste management practices and to ensure proper waste management practices are implemented.

UNOCI accepted recommendation 5 and stated that the Environment Unit was participating in the mandatory induction training for new Mission staff members and that broadcasts and special training to Mission personnel would be provided regularly. Recommendation 5 remains open pending receipt of evidence that steps have been taken to raise the awareness of Mission personnel on waste management practices.

IV. ACKNOWLEDGEMENT

33. OIOS wishes to express its appreciation to the management and staff of UNOCI for the assistance and cooperation extended to the auditors during this assignment.

(Signed) David Kanja
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STATUS OF AUDIT RECOMMENDATIONS

Audit of waste management in the United Nations Operation in Côte d'Ivoire

| Recom. no. | Recommendation | Critical ¹ / Important ² | C/ O ³ | Actions needed to close recommendation | Implementation date ⁴ |
|------------|--|---|----------------------|--|----------------------------------|
| 1 | UNOCI should assign adequate resources to: (a) inspect waste disposal practices and monitor and report on the adequacy of these practices by UNOCI and contractors to ensure proper and compliant practices are being followed at all sites; and (b) ensure that quarterly performance evaluations of contractors are conducted and documented. | Critical | O | Receipt of evidence that: (a) periodic inspections of waste disposal practices by UNOCI and the contractor are being conducted and properly reported; and (b) quarterly performance evaluations of contractors are regularly done and documented. | 31 October 2015 |
| 2 | UNOCI should implement procedures and provide training that ensure: (a) assigned waste management responsibilities are clear; (b) wastewater treatment plants, septic tanks and other wastewater infrastructures are properly operated, inspected and maintained; and (c) treated wastewater is tested as meeting internationally recognized standards prior to reuse or discharge into the local environment. | Critical | O | Receipt of evidence that procedures have been implemented and training provided to ensure: (a) clear assigned waste management responsibilities; (b) effective management of wastewater treatment plants and other wastewater infrastructures; and (c) proper testing of treated wastewater. | 30 November 2015 |
| 3 | UNOCI should install collection bins and storage containers with adequate capacity in all mission locations and enforce the requirement on the segregation of all waste at points of generation. | Important | O | Receipt of evidence that collection bins and storage containers with adequate capacity have been installed in all locations, and all waste is being segregated. | 31 March 2016 |
| 4 | UNOCI should take steps to ensure periodic waste management reporting to senior management is conducted. | Important | O | Receipt of evidence that periodic waste management reporting to senior management is being conducted | 30 September 2015 |
| 5 | UNOCI should take steps to raise the awareness of Mission personnel on waste management practices and to ensure proper waste management practices are implemented. | Important | O | Receipt of evidence that steps have been taken to raise the awareness of Mission personnel on waste management practices. | 30 November 2015 |

¹ Critical recommendations address critical and/or pervasive deficiencies in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.

² Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

³ C = closed, O = open

⁴ Date provided by UNOCI in response to recommendations.

APPENDIX I

Management Response

Management Response

Audit of waste management in the United Nations Operation in Côte d'Ivoire

| Rec. no. | Recommendation | Critical ¹ / Important ² | Accepted? (Yes/No) | Title of responsible individual | Implementation date | Client comments |
|----------|--|---|-----------------------|---|--|---|
| 1 | UNOCI should assign adequate resources to: (a) inspect waste disposal practices and monitor and report on the adequacy of these practices by UNOCI and contractors to ensure proper and compliant practices are being followed at all sites; and (b) ensure that quarterly performance evaluations of contractors are conducted and documented. | Critical | Yes | (a) Environmental Engineer (b) Facilities Manager | (a) 31 October 2015 (b) 31 October 2015 | Engineering Section has recently recruited two staff, Environmental Officer and Environmental Engineer who have started regular inspections of all ONUCI premises and coordinating with concerned units of the mission with regards to compliance of relevant environmental practices. |
| 2 | UNOCI should implement procedures and provide training that ensure: (a) assigned waste management responsibilities are clear; (b) wastewater treatment plants, septic tanks and other wastewater infrastructures are properly operated, inspected and maintained; and (c) treated wastewater is tested as meeting internationally recognized standards prior to reuse or discharge into the local environment. | Critical | Yes | (a) Chief Engineer (b) Water & Sanitation Assistant (c) Water Quality Monitor | (a) 30 September 2015 (b) 31 October 2015 (c) 30 November 2015 | Water & Sanitation Unit has already started training of Waste Water Treatment Operators throughout the Mission since 13 August 2015 at Anonkoua-Kouté camp where seven treatment plants are operational. Training of operators for the remaining camps in the sectors is planned to be completed by 31 October 2015. Maintenance of septic tank covers and other wastewater infrastructures is in progress and planned to be completed by 30 November 2015. |
| 3 | UNOCI should install collection bins and storage containers with adequate capacity in all mission locations and enforce the requirement on the segregation of all waste at points of generation. | Important | Yes | Facilities Manager | 31 March 2016 | Assessment for additional collection bins and storage containers in each camp has been completed. Request for new acquisition to be made within this budget year (FY 2015/16). |

¹ Critical recommendations address significant and/or pervasive deficiencies or weaknesses in governance, risk management or internal control processes, such that reasonable assurance cannot be provided regarding the achievement of control and/or business objectives under review.

² Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

Management Response

Audit of waste management in the United Nations Operation in Côte d'Ivoire

| Rec. no. | Recommendation | Critical ¹ / Important ² | Accepted? (Yes/No) | Title of responsible individual | Implementation date | Client comments |
|----------|--|---|-----------------------|---------------------------------|---------------------|--|
| | | | | | | The Environmental Unit in coordination with Contingent owned-equipment (COE) will keep on sensitizing contingents on the requirement of segregation of waste during their regular field inspections of all ONUCI sites |
| 4 | UNOCI should take steps to ensure periodic waste management reporting to senior management is conducted. | Important | Yes | Environmental Engineer | 30 September 2015. | Quarterly report on waste management will be provided to senior management and follow up will be made to ensure that the targets in the Environmental Action Plan are implemented. |
| 5 | UNOCI should take steps to raise the awareness of Mission personnel on waste management practices and to ensure proper waste management practices are implemented. | Important | Yes | Environmental Engineer | 30 November 2015 | The Environment Unit has been participating on the regular Induction training session for newly arriving staff members to the mission. Moreover, broadcasts as well as special training to mission personnel will be provided regularly. |