SAUDI BINLADIN GROUP
OPERATION & MAINTENANCE

SBG O&M AIR EMISSION CONTROL MANUAL

INTRODUCTION

These guidelines are intended to assist tenants in the management of emissions to the air associated with operations occurring on the sites and projects of SBG O&M. These guidelines are to be used by both tenants and qualified environmental air quality professionals who may be hired to assist with technical aspects of developing and implementing an Air Emissions Control Manual.

An (AIR EMISSION CONTROL MANUAL) may be required:

- As an environmental condition of works authorized by SBG O&M
- Through a project permit issued by SBG O&M, and/or
- As specified in the lease terms or license agreement with SBG O&M

OVERVIEW

The purpose of these guidelines are to identify typical components and content of an AIR EMISSION CONTROL MANUAL, in order to clarify the expectations for, and facilitate development of, an effective AIR EMISSION CONTROL MANUAL that meets the needs of SBG O&M. These guidelines are intended to assure that, where operations are found to warrant formal management of emissions, the management process is carried out in a consistent manner and to an appropriate standard. The AIR EMISSION CONTROL MANUAL should be submitted as a written document, following the general outline presented in these guidelines. In addition to each of the management plan components, the AIR EMISSION CONTROL MANUAL should also clearly present supporting data, as well as any key design and plan assumptions. The AIR EMISSION CONTROL MANUAL should be supported by a qualified environmental professional (QEP) with expertise in pollution prevention management and air quality issues. The tenant is ultimately responsible for the successful implementation and on-going management of the AIR EMISSION CONTROL MANUAL.

PRINCIPLES / OBJECTIVES

SBG O&M is committed to reducing air emissions associated with maintenance projects activities, including fugitive emissions (such as dust and volatile organic carbons (VOCs)), and greenhouse gases (GHG), in order to protect air quality and the health of maintenance projects workers and local communities, and mitigate climate change. SBG O&Ms objectives as related to air emissions include:

- Reduction of Criteria Air Contaminants (CAC), e.g. equipment turnover and upgrades;
- Reduction in the severity and number of air emission discharge events, e.g. fugitive dust episodes;
- Reduction of all air emissions (CAC and GHG) through improvements in operational efficiency, use of alternative technologies, fuel switching, and electrification;
- Demonstration of continuous improvement in air emission management.

MANAGEMENT PLAN COMPONENTS

SBG O&M Air Emission Control Manual contain the following components:

1) AIR EMISSION CONTROL MANUAL Scope and Objectives - Outline the context, intent, and general approach of the plan including contact information for responsible individuals.

2) Site Emissions Inventory - Provide site and property descriptions including physical structures, activities which may include supply chain aspects, materials handled, operational factors and resulting sources of emissions.

3) Air Emissions Assessment - Identify potential impacts from the site operations to air quality (issues of concern) on-site and off-site, particularly adjacent properties and the surrounding community.

4) Mitigation Measures - Identify policies, operational plans, standard operating procedures, physical controls, and complaint management processes required to mitigate and continuously manage impacts for the air emissions associated with the site.

5) Monitoring Methodology - Describe methodologies and procedures for tracking and monitoring of management plan objectives.

6) Reporting - Provide details on reporting data, format, content and frequency as applicable to measured performance and overall plan effectiveness. Any requirements for SBG O&M would be detailed in the project permit or lease terms.

APPLICABILITY

These guidelines relate to operational air emissions and can support the development of an Operations and Maintenance Environmental Management Plan for regular operational or non-routine maintenance activities. The general framework for SBG O&M AIR EMISSION CONTROL MANUAL as described in these guidelines are applicable and intended to be scalable for a range of activities associated with the maintenance projects.

GUIDELINES: MANAGEMENT PLAN FRAMEWORK

An AIR EMISSION CONTROL MANUAL is intended to encompass all aspects of potential impacts as a result of emissions to the air from the direct and consequential activities associated with SBG O&M tenants. An AIR EMISSION CONTROL MANUAL ensures appropriate practices are in place to protect air quality and the health of maintenance projects users and local communities. A well-structured and complete AIR EMISSION CONTROL MANUAL facilitates SBG O&M's review of the management plan and is a method of documenting the responsibilities and commitments of tenants with regard to managing air emissions.

AIR EMISSION CONTROL MANUAL SCOPE AND OBJECTIVES – "SET YOUR TARGETS"

The AIR EMISSION CONTROL MANUAL scope should address the activities associated with the site and operations that generate air emissions, geographic and meteorological factors that influence impacts to air quality. As appropriate, activities on site and associated with the supply chain should be considered.

OBJECTIVES

Objectives of the AIR EMISSION CONTROL MANUAL should be measureable, where practical, and include commitments to preventing pollution, and to continuous improvement. Consideration should be given to technological options, financial, operational, and business requirements. The objectives can be either qualitative or quantitative and should provide sufficient detail to ensure that they are clear for users of the AIR EMISSION CONTROL MANUAL. Objectives are expected to lead to programs which should designate responsibility and the means and time-frame by which they should be achieved. High level objectives include:

- Implement specific operational controls for all air emissions occurring on-site
- Reduce potential exposure to local residents and the general public
- Minimize the potential for community nuisances such as fugitive dust emissions
- Validate air quality modeling estimates through monitoring, i.e. verify whether
- potential impacts arising from the project are observed through monitoring

MANAGEMENT PLAN DURATION

The plan duration outlines how long the management plan will be carried out and during which phases of site activity. Various phases may require different monitoring, reporting, or procedures, and should be clearly outlined within the AIR EMISSION CONTROL MANUAL. Typical relevant phases, one or more of which may apply are:

- Baseline - Establish the baseline conditions, generally focused on measurement procedures and methods, specifying how the baseline will be determined and the timing in relation to other activities.
- Maintenance – is generally captured within the Maintenance Environmental Management Plan (SBG O&M EMP) and these guidelines can support the development and scoping of the air quality aspects of the SBG O&M EMP.
- Post Project Validation (at terminal capacity) - Establish a post-project snapshot of air quality conditions, similar to and for comparison to a baseline. This is the point of reference to confirm whether the predicted impacts from the terminal are realized and whether additional mitigation measures are required.
- Ongoing Operations - Details for ongoing air emissions management, generally focused on standard operating procedures, type and extent of monitoring, reporting and performance tracking. The AIR EMISSION CONTROL MANUAL should be reviewed on a regular basis (e.g. annually) to identify required revisions and ensure it remains effective and continues to meet the stated objectives.

MAINTENANCE SITE EMISSIONS INVENTORY

Describe all the sources of emissions for the operations and supply chain as appropriate. Even if the management plan is only for some aspects of the operations, all sources should be identified in order to provide a comprehensive overview. Clearly specify components that are included and excluded from the plan along with rationale as appropriate. Consider all potential activities that could occur on site that may impact air quality, including:

- Activities associated with normal operations,
- Consequential activities such as the supply chain servicing the site,
- Housekeeping and general cleaning activities,
- Material storage, and
- Infrequent operations.

SITE EMISSIONS ASSESSMENT

Assess the potential impacts to air quality and the surrounding community from the various emission sources using a risk-based approach. A systematic process should be applied that identifies the most significant issues. For example, frequently occurring events with significant impacts should be given a higher priority than occasional events with nominal impacts. Assessment of the potential risks should rely on the professional judgment of tenant operational staff and qualified environmental professionals supporting the development of the AIR EMISSION CONTROL MANUAL.

ISSUES OF CONCERN IDENTIFICATION

The identification of potential impacts from air emissions should incorporate a review of:

- Emission Sources - Activities and associated emissions as identified in the site emissions inventory, to determine if any of the emitted pollutants are of particular health, nuisance or other concern (including diesel particulate matter, GHG, fugitive dust).
- Receivers - Locations on-site and in the surrounding community (residential, industrial, commercial, habitat, etc.) that may be impacted by the emission sources.

EMISSIONS RISK ASSESSMENT

Classify and prioritize the air emission risks arising from operations and consequential activities based on the site emissions review and relationship to the receivers. Identify which emissions are anticipated, and how frequently these emissions will be transported through the air, and consider the conditions under which the emissions would be mobilized (operational activities, meteorological conditions, wind speed, wind direction, etc.). A ranking matrix could be developed to assist in the prioritization of sources in order to identify those that require formal management and tracking through the AIR EMISSION CONTROL MANUAL.

MITIGATION MEASURES

Based on the results of potential impacts, as well as any special issues, develop a strategy and measures to manage (i.e. control) the identified risks. Generally speaking, effective control and mitigation measures should employ the following approaches, in order of preference:

- Prevention - Control the presence of potentially polluting materials within the site. Prevention generally is best achieved through the site layout, process and equipment design, and operational decisions.
- Containment/Reduction - Sources that are part of operations and activities on site should have suitable controls to minimize and where possible reduce the release of emissions. Site management activities, such as good housekeeping and equipment maintenance schedules, should minimize and reduce the potential interaction between emission sources and meteorological events.
- Response - The type of response to an impact to air quality or community complaint should be documented, clearly communicated, and integrated into standard operating procedures.

The AIR EMISSION CONTROL MANUAL strategy should address the following key points as related to the controls and mitigations measures:

- Designate a responsible person to act as the AIR EMISSION CONTROL MANUAL Manager to oversee implementation of the AIR EMISSION CONTROL MANUAL and ensure compliance with its requirements.
- Identify training requirements for personnel; who should be trained, when training should occur, their level of responsibility, and their roles in air emission pollution prevention.
- Define required maintenance activities, frequency and documentation.
- Define response and adaptive actions in the event of a failure in the implementation of the AIR EMISSION CONTROL MANUAL or of a recommended mitigation measure.

- Define triggers for adaptation or modification of the AIR EMISSION CONTROL MANUAL in the face of changing conditions, activities or pollution risks.
- Define regular review intervals to ensure that the AIR EMISSION CONTROL MANUAL is working as intended and to support a culture of continuous improvement.

MONITORING AND REVIEW METHODOLOGY

An effective AIR EMISSION CONTROL MANUAL should define a monitoring process to track both environmental and management plan performance. Monitoring how well the risk is being controlled (i.e. tracking performance) is an integral part of managing and controlling air emissions. Monitoring should consider, but not be limited to, visual inspections, audits, checklists, continuous and spot measurements, and recording of meteorological conditions. The methodology for tracking performance should be informed by the emissions risk assessment. The monitoring methodology should consider and describe, as appropriate, the following:

- Location or site for continuous and spot measurements
- Key emissions/pollutants that are tracked
- Key meteorological conditions that are tracked
- Type of monitoring, e.g. equipment selection, audit procedure, checklist, etc.
- Frequency of monitoring or checks
- Methodology supporting the monitoring type and technique, e.g. analysis
- How monitoring equipment is maintained and serviced
- Who is responsible for monitoring?