LOS ANGELES UNIFIED SCHOOL DISTRICT
REFERENCE GUIDE

TITLE: Methane Safety Program Implementation Guidelines

NUMBER: REF-5671.0

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ROUTING
Local District Superintendents*
Site Administrators*
School Safety Committees*
Chief Facilities Executive
School Police
* For Facilities listed in Tables 1 and 2 of this Reference Guide

PURPOSE: The purpose of this Reference Guide is to outline the key elements of the methane safety and gas mitigation programs required at various LAUSD facilities, and specify the responsibilities of the Principals, non-school facility managers, Los Angeles School Police Department (LASPD), school nurses, and the Office of Environmental Health and Safety (OEHS) in implementing the programs at the respective schools.

MAJOR CHANGES: This is a new document.

INSTRUCTIONS: The LAUSD is required to implement measures to control intrusion of hazardous gases and vapors to the indoor environment where such a condition is a recognized concern. The hazardous gases and vapors of concern include naturally occurring methane and hydrogen sulfide emanating from geologic formations and landfills, volatile organic compounds emanating from soil contamination and landfills, and methane released while servicing compressed natural gas (CNG) fueled buses.

Measures utilized by the LAUSD to control intrusion of hazardous gases and vapors include passive and active gas mitigation systems as described in Sections I and II below. Maintenance and operation of these systems is typically done in accordance with the terms and conditions contained in enforceable, site-specific, legal agreements between the LAUSD and the California Department of Toxic Substances Control (DTSC) or pursuant to requirements of the Los Angeles City Fire Department (LAFD).

I. Active Gas Mitigation Systems

Active gas mitigation systems incorporate gas detectors that trigger alarms and activate ventilation systems to reduce gas concentrations in rooms or beneath the structure. Buildings constructed with systems to actively control intrusion of subsurface gases or vapors typically feature an impervious membrane and

mechanical ventilation system installed beneath the building slab. Operation and maintenance programs for active gas mitigation systems are managed by OEHS with support as needed from the LAUSD Maintenance and Operations Branch (M&O), consultants, and equipment vendors for routine activities. However, support is also needed from a team comprised of school/facility staff, school police, and OEHS staff who have been trained to respond to alarms and incidents associated with the system. Facilities where active gas mitigation systems are operating or are being constructed are listed in Table 1 below.

Table 1. Locations with Active Gas Mitigation & Alarm Systems

Facility Name	Alarm Types	Oversight
1) Francis Poly HS & Lewis Continuation HS	Supervisory only	City of LA
2) G. DeLaTorre Jr. Elementary School	Supervisory only	DTSC
3) Gardena Bus Garage (CNG Alarm System)	Full	LAFD
4) Hancock Park Elementary School	Full	LAFD
5) Robert F. Kennedy Community Schools	Full	DTSC
6) Roybal Learning Center	Full	DTSC
7) Central Region Elem. School #20‡	Supervisory only	DTSC
8) Central Region Elem. School #22*	Supervisory only	DTSC

* Effective 15-Aug-2012

‡ Effective 15-Aug-2013

Locations identified in Table 1 as having 'Supervisory' alarm types incorporate sensors to measure gas concentrations beneath the building and automatically activate systems to ventilate excess gas accumulations from beneath the buildings. As an additional precaution, the ventilation rates in occupied spaces may be increased. The 'Supervisory' type alarm systems also provide for warning notifications of equipment trouble and of increasing gas concentrations to enable timely response and corrective action by OEHS.

Locations identified in Table 1 as having 'Full' alarm types incorporate the above described 'Supervisory' alarm types, as well as in-room sensors and alarms. Alarm response procedures at these locations include notification of the LAFD in the event indoor methane concentrations exceed a specified limit (generally 12,500 parts per million). Alarm response instructions are posted near the alarm panels at each facility, and notification instructions for various alarm conditions (call trees) are included with alarm response information provided to School Police Watch Officers and OEHS Duty Officers.

- The Gardena Bus Garage and Hancock Park Elementary School are equipped to automatically call a privately-operated Fire Department approved Central Station, which interprets the alarm signal and notifies School Police and the Fire Department.
- Robert F. Kennedy Community Schools and the Roybal Learning Center currently require manual response to alarms by the local school staff, who

shall call School Police in the event of a High Gas Alarm.

II. Passive Gas Mitigation Systems

Facilities utilizing passive gas mitigation systems to control subsurface gases are generally constructed with impervious membranes and networks of perforated gas collection piping installed beneath building slabs or pavement to facilitate natural ventilation of those areas. Abandoned oil and gas wells at the facility, if any, may also be equipped with gas collection hoods connecting to aboveground vents. Passive gas mitigation systems at LAUSD facilities typically do not incorporate gas detection and alarm systems.

Operation and maintenance programs for passive gas mitigation systems are managed by OEHS and generally include periodic monitoring and reporting of subsurface gas concentrations and protection of installed system components (membrane and vent piping network). Facilities where passive gas mitigation systems have been installed or are being constructed are listed in Table 2 below.

Table 2. Locations with Passive Gas Mitigation Systems (No Alarms)

Facility Name	Oversight
1) Byrd Middle School (Building Areas)	City of LA
2) Commonwealth Elementary School (Area of Addition)	DTSC
3) Bell E&CC*	OEHS
4) Belmont HS (Athletic Field & Wellness Clinic)*	OEHS
5) Central Region HS #16 (Oil Well Vent)*	OEHS
6) Middle College HS *	DTSC
7) South Region SPAN K-8 #1*	DTSC
8) Valley Region Middle School #3 (Building Areas)*	OEHS
9) Virgil Middle School (Athletic Field)*	DTSC
10) Raul Perez Park (adjacent to SRHS #7)* (Indoor Soil Vapor Intrusion)	DTSC

* Effective 15-Aug-2012

III. Responsibilities of Site Administrator

For facilities <u>with active gas mitigation systems</u> the Site Administrator (Principal or Facility Manager) shall:

- Be available at all times, either at the Facility or on-call, to coordinate any necessary gas incident response.
- Ensure proper response to gas mitigation system alarms and incidents at the school. Site specific alarm response procedures are posted near the methane alarm panel and generally include:
  - Contacting School Police Watch Officer and reporting alarm status within five to ten minutes of a high indoor gas (Full) or gas

warning (Supervisory) alarm being triggered.
  - Contacting the OEHS Duty Officer within four hours of an equipment fault alarm (Supervisory, see Section I) being triggered.

- Initiate an "Evacuate Building" response action in the event of a high indoor gas (Full) alarm, where applicable. Response actions for a 'Full' alarm shall be in accordance with procedures described in the Methane Mitigation Alarm Response Protocol (posted near the methane alarm panel at the site) and the site-specific Safe School Plan. Generally, the Response Protocol will specify that the affected buildings be evacuated within 30 minutes of a Full Alarm, which will allow a limited amount of time to verify the alarm before ordering an evacuation.
- Site Administrators may delegate their responsibilities to one or more people they assign to be a Site Methane Safety Coordinator (SMSC). The ideal candidate to fill this role will be an Assistant Principal or other member of the facility administrative staff who is in responsible charge and who regularly works in the immediate vicinity of the gas mitigation alarm panel location.
- Designate one or more of the school staff to act as alternate(s) on occasions when the Site Administrator (or SMSC, if assigned) is absent or otherwise unavailable.
- Ensure that members of the school gas mitigation team (Site Administrator, SMSC, designated alternate(s), Plant Manager, and/or School Nurse) receive initial and annual refresher training in methane and hydrogen sulfide gas hazard awareness, alarm response procedures, and gas incident response protocols. Coordinate with the OEHS Gas Mitigation Project Manager (GMPM) to arrange for instruction and instructional materials. It is recommended that four to eight hours be allowed for initial training, and two to four hours for refresher training.
- Request the SMSC or Plant Manager visually verify reported malfunctions or damage to the gas mitigation system equipment within 15 to 20 minutes of receiving the report from a student, staff, or visitor.
- Know the areas where gas mitigation features such as impervious membranes, building slab venting networks, pavement venting networks, and sand dispersion layers have been installed and need to be protected in place during intrusive work or other activities at the facility.
- Confirm that either the GMPM or the OEHS Duty Officer has been notified in advance of any subsurface work (e.g., pavement demolition, excavation, drilling, etc.) planned in areas where impervious membranes, building slab and pavement venting networks, or sand dispersion layers are installed.

For facilities <u>with passive gas mitigation systems</u> the Site Administrator shall:

- Know the areas where gas mitigation features such as impervious membranes, building slab venting networks, pavement venting networks, and sand dispersion layers have been installed and need to be protected in place during intrusive work or other activities at the facility.
- Confirm that either the GMPM or OEHS Duty Officer has been notified in advance of any subsurface work (e.g., pavement demolition, excavation, drilling, etc.) planned in areas where impervious membranes, building slab or pavement venting networks, or sand dispersion layers are installed.

IV. Responsibilities of the School Plant Manager

The Plant Manager, when assigned to a particular school, shall be responsible for:

- Responding to gas mitigation system alarms as described in the site-specific alarm response procedures and contingency plan, which may include:
  - Contacting School Police Watch Officer and Principal and reporting alarm status within five to ten minutes of a full alarm (high indoor gas) or gas warning alarm being triggered.
  - Contacting the OEHS Duty Officer within four hours of an equipment fault alarm being triggered.
- Visually verifying reported malfunctions or damage to the gas mitigation system equipment within 15 to 20 minutes of receiving the report from a student, staff, or visitor.
- Facilitating access into various areas of the campus by the GMPM and OEHS-contracted support as they may need in order to complete periodic monitoring and system inspection activities.
- Knowing the areas where gas mitigation features such as impervious membranes, building slab venting networks, pavement venting networks, and sand dispersion layers have been installed and need to be protected in place during intrusive work or other activities at the facility.
- Confirming that either the GMPM or the OEHS Duty Officer has been notified in advance of any subsurface work (e.g., pavement demolition, excavation, drilling, etc.) planned in areas where impervious membranes, building slab or pavement venting networks, or sand dispersion layers are installed.
- Participating in the initial and annual refresher training on methane and hydrogen sulfide gas hazard awareness, alarm response procedures, and gas incident response protocols (presented to the school gas mitigation team as described in the previous section).
- Reporting damage or potential damage (such as damage to membrane from digging activities) of the gas mitigation system to the OEHS Duty

Officer.

V. Responsibilities of OEHS

The LAUSD OEHS is responsible for directing the overall design, construction, operation, periodic maintenance and calibration, inspection, repair, emergency response, and agency reporting of the gas mitigation systems. The OEHS shall appoint a GMPM to act as the primary point of contact regarding gas mitigation matters, and be the primary liaison with regulatory agencies including the DTSC and LAFD. The GMPM may be contacted at 213-241-3199.

OEHS shall be responsible for implementing the following specific elements of the methane safety program at 'methane schools'; i.e., at locations where methane or hydrogen sulfide are recognized concerns, as listed in Tables 1 and 2:

- Tracking the status and making corrective actions as needed to ensure the following methane mitigation operation and management requirements are complete and conform with LAUSD's methane safety guidance, applicable gas safety standards, and government oversight agency requirements:
  - Periodic inspections of each facility shall be conducted to ensure equipment and alarms are in good working condition and required signage is in place. The frequency and scope of inspections shall be defined in an operation and maintenance plan, and shall be performed at least once per year by properly qualified methane specialists. Records of the dates, findings, and recommendations of the periodic inspections shall be kept on file at the site.
  - Agency reporting and notifications shall be made in accordance with the terms of applicable codes, ordinances, and agency agreements.
  - Responses to gas alarms, system malfunctions, and other methane mitigation system emergencies shall be within the time prescribed in the Operation and Maintenance Plan, and incident response and resolution shall be fully documented in incident reports, which shall be kept on file at the site.
  - A school gas mitigation team shall be identified in the Operation and Maintenance Plan and provided training in methane and hydrogen sulfide hazard awareness, alarm response procedures, and gas incident response protocols. Following initial training, the team shall receive an annual refresher training. Records of the training dates and individuals attending shall be maintained at the site.
  - A site-specific Methane Mitigation Operation and Maintenance

Manual shall be maintained at the site. The manual shall contain as-built records describing the methane mitigation system construction, equipment operation and maintenance information, inspection and maintenance records, agency directives and agreements, training records, alarm and incident response protocol, incident reports, school gas mitigation team organization and identification, and training records.

- Including review of the site Methane Mitigation Operation and Maintenance Manual as a part of the Safe School Inspection Program at 'methane schools'. The review shall check that records are complete and current.
- Assessing the potential methane risk associated with oil fields, landfills, methane zones and methane buffer zones at all proposed new school sites and for all expansion, major repair, and modernization projects at existing facilities.
- Compiling and maintaining a database of LAUSD-owned and leased facilities that identifies the methane risks associated with oil fields, landfills, methane zones and methane buffer zones at each facility and provides a ranking in terms of relative hazard. The ranking shall consider findings from previous methane surveys and any mitigative measures already installed at the site. The database shall indicate where methane investigations may be warranted following a significant seismic event. Criteria defining a significant seismic event will be consistent with the criteria that trigger structural inspections at school facilities.
- Providing design, construction quality assurance, and system commissioning support to the Facilities Services Division (FSD) Project Execution Branch as needed to incorporate required gas mitigation system features into new facilities and expansions or modernizations of existing facilities. OEHS may engage consultants from among its list of firms prequalified to provide such methane engineering services as needed to complete gas mitigation system design and construction in accordance with regulatory requirements.
- Negotiating and complying with the terms of any Operation and Maintenance Agreements made with the DTSC or other regulatory agency, and ensuring that others within the LAUSD organization have been made aware of their obligations under such Agreements.
- Responding to supervisory and full alarms. An OEHS Duty Officer shall be assigned on a rotating basis to receive, log, and refer calls requesting OEHS support between the hours of 7:30 am and 4:00 pm. After these hours a recording will refer callers to the LASPD. Each Duty Officer will be provided information regarding the gas mitigation alarm system and

notification protocol for facilities with active gas mitigation systems to enable them to respond appropriately to telephoned notifications of alarms or incidents from personnel at the facility or school police.

- Providing information and training to M&O on the construction of the gas mitigation systems at each facility to enable effective planning and notification of maintenance, repair, and construction activities that may impact the gas mitigation systems.

The OEHS Duty Officer may be contacted at 213-241-3199.

VI. Responsibilities of the LASPD

The LASPD is responsible for responding to notifications of supervisory and full gas alarms. The LASPD Dispatch Center will be called by school personnel, an auto-dialing device, or a Central Alarm Station in the event of a high gas alarm or gas warning alarm at one of the facilities listed in Table 1. The LASPD shall assign Watch Officers on a rotating basis to receive, log, and refer calls into the Dispatch Center 24 hours a day, seven days a week. To enable an effective response to telephoned notifications of methane alarms or incidents, OEHS will provide site-specific information about the gas mitigation alarm systems, call trees, and notification protocols, which can be distributed to the Watch Officers as a reference to enable them to respond appropriately to telephone notifications of alarms or incidents.

The LASPD Dispatch Center may be contacted at 213-625-6631.

VII. Responsibilities of M&O

Resources within M&O are needed to support the following elements of the Methane Safety Program:

- Make timely notifications to the OEHS Duty Officer or GMPM of maintenance, repair, or construction work that may impact the gas mitigation systems at the facilities listed in Tables 1 and 2. Terms of the O&M Agreements between the DTSC and LAUSD require that the DTSC be notified and allowed to review and approve plans for such activities unless an emergency. Notifying OEHS of work according to the following schedules should allow sufficient time to negotiate DTSC approval.
    1) Notify OEHS at least two work days before planned excavations at any of the locations listed in Table 1 or 2. Notification to OEHS may be made by emailing the location and contact information to methane@lausd-oehs.org. In case of excavation work needed to complete emergency repairs, notify the OEHS Duty Officer prior to backfilling the excavation.
    2) Notify OEHS at least three weeks in advance of work expected to

have a minor impact to the existing gas mitigation system (e.g., installation or repair of underground utilities, driving stakes, installing fence posts, replacing pavements, etc.).

3) Notify OEHS at least seven weeks in advance of any work that may have a significant impact to the existing gas mitigation design for the building (e.g., construction of building additions or new pavement areas, modification or removal of gas mitigation system components, etc).

- Provide plumbing, electrician, and machinist support from C3 Central Shops to complete repairs on various gas mitigation system components as may be requested by the GMPM. Work shall be performed within a schedule and budget defined in a Work Order under a funding line approved by OEHS. Variances from plans for repairs or improvements shall be approved by the GMPM.
- Assist OEHS and its consultants in accessing school facilities as necessary to complete inspections, emergency repairs, and routine monitoring of the gas mitigation systems. Routine inspections and monitoring are generally scheduled every three months and conducted during weekends or times when classes are not in session. Emergency repairs can usually be done during normal work hours without interfering with normal school activities, but may be scheduled during weekends or other times when classes are not in session. Typically, the Plant Manager or custodial staff only need to be present to unlock and secure designated areas – time keeping and supervision of the consultant's activities will be overseen by OEHS. If plant custodial staff are unavailable to support the work, the GMPM will arrange to obtain keys through the School Principal and will be present during the work.

VIII. Responsibilities of the FSD Project Execution Branch

Resources within the FSD Project Execution Branch are needed to support the following elements of the Methane Safety Program:

- Provide written notification to OEHS in accordance with REF-5314.0 for an environmental review of the following types of projects regardless of funding source:
  1) Proposed new school site;
  2) Expansion, major repair, or modernization of existing school facilities;
  3) Proposed placement of bungalows or other temporary structures at existing school facilities;
  4) Change in use or occupancy of existing facilities;
  5) Proposed co-location or land lease agreements for charter school facilities;

6) Proposed joint-use and innovation funds programs; and
7) Proposed lease or use of non-District property for District purposes.

As part of its environmental review, OEHS will determine if a methane or volatile organic compound assessment will be needed to evaluate the potential risk associated with oil fields, gas reservoirs, landfills, methane zones and methane buffer zones. The methane assessment will generally include field work to measure methane and hydrogen sulfide concentrations in soil gas at the site, and may include a review of property records, aerial photos, oil field maps, and other documents to evaluate historic site use and the potential presence of methane gas sources and environmental impacts associated with oil field activities. Based on the results of the methane assessment, OEHS will advise on subsequent actions needed for regulatory compliance, School Safety Certification, or implementation of gas mitigation measures.

- Require excavators to notify OEHS at least two work days before excavating at any of the locations listed in Table 1 or 2. Excavation work includes grading, trenching, digging, ditching, drilling, auguring, tunneling, scraping, cable or pipe plowing, rod driving, resurfacing of pavements, and demolition of aboveground structures. Notification to OEHS may be made by emailing the location of the work and contact information to methane@lausd-oehs.org. Alternatively, notification may be made by calling Dig-Alert at 8-1-1 for the facilities registered in Dig-Alert (listed in Table 3 below). OEHS will be automatically notified by Dig-Alert and will reply to determine if methane mitigation system elements may be impacted by the proposed work.

Table 3. Dig-Alert Registered Locations

Byrd Middle School	Roybal Learning Center
Francis Polytechnic HS	Central Region Elem. School #20
G. DeLaTorre Jr. Elem. School	Central Region Elem. School #22
Hancock Park Elem. School	Valley Region Middle School #3
Robert F. Kennedy CS	

- Make timely notifications to the GMPM or OEHS Duty Officer of modernization or construction work that may impact the gas mitigation systems at the facilities listed in Tables 1 and 2. Terms of the O&M Agreement between the DTSC and LAUSD require that the DTSC be notified and allowed to review and approve plans for such activities. Notifying OEHS of work according to the following schedules should be allow sufficient time for OEHS to negotiate DTSC approval.
  1) Notify OEHS at least three weeks in advance of work expected to have a minor impact to the existing gas mitigation system (e.g.,

installation of underground utilities, constructing shade shelters, replacing pavements, etc.).

2) Notify OEHS at least seven weeks in advance of any work that may have a significant impact to the existing gas mitigation design for the building (e.g., construction of building additions or new pavement areas, modification or removal of gas mitigation system components, etc).

- Coordinate with OEHS and its gas mitigation designers as needed to incorporate required gas mitigation features into DSA-approved construction plans.
- Coordinate with OEHS and its gas mitigation designers and system commissioning agents to provide special gas mitigation inspectors and testing as needed to support special construction quality assurance requirements that may be specified in DTSC-approved Construction Quality Assurance Plans.

RELATED RESOURCES:

REF-5314.0 -- Procedures for Environmental Review of Proposed Projects
Site-Specific Alarm Response Procedures (posted near gas alarm panel at facility)
Site-Specific Operation and Maintenance Plans and Contingency Plans for Subsurface Gas Mitigation System (one copy maintained at Site and one copy at OEHS)
Site-Specific Operation and Maintenance Agreements for Subsurface Gas Mitigation System (one copy maintained at Site and one copy at OEHS)
OEHS Duty Officers' Binder – Methane Information Tab
LASPD Watch Officers' Binder – Methane Information Tab

ASSISTANCE:

For assistance or further information please contact the Office of Environmental Health and Safety (213) 241-3199.