



The following is the Leon County School District (LCSD)

IAQ Standard Operating Procedure (SOP). Please read it thoroughly.

## **PURPOSE**

The purpose of this Standard Operating Procedure (SOP) is to provide the LCSD buildings with the optimum level of indoor air quality (IAQ).

## **STANDARDS FOR INDOOR AIR QUALITY**

LCSD is dedicated to providing a safe workplace and this Standard Operating Procedure (SOP) was developed from and relies on applicable components of:

Occupational Safety and Health Administration (OSHA) standards

American Society of Heating, Refrigeration and Air conditioning Engineers (ASHRAE) standard 62-1989 (Ventilation for Acceptable Indoor Air Quality)

Environmental Protection Agency, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and National Institute for Occupational Safety and Health guidance (Building Air Quality A Guide for Building Owners and Facility Managers, Building Action Plan and Indoor Air Quality Building Education and Assessment Model {IBEAM}).

## **OBJECTIVES**

The objectives of this Standard Operating Procedure (SOP) include the following:

To prevent illness, injury, and adverse health symptoms associated with poor indoor air quality

To respond to indoor air quality complaints effectively and to make recommendations for improvement

To maintain indoor air quality within acceptable levels according to consensus guidelines

To provide information to employees about indoor air quality

## **GENERAL**

LCSD is committed to providing each employee a safe place of employment. LCSD will take actions to keep the workplace free of recognized hazards that cause, or are likely to cause, death or serious physical harm and, when available, will employ feasible means that will eliminate or materially reduce the recognized workplace hazard.

LCSD recognizes the impact that indoor air quality has in the workplace. In an effort to provide the LCSD Community with the optimum level of indoor air quality, the Maintenance Department office of Environmental Health and Safety has developed an indoor air quality Standard Operating Procedure (SOP).

## **BACKGROUND INFORMATION**

### *FACTORS ASSOCIATED WITH POOR INDOOR AIR QUALITY*

Factors associated with poor indoor air quality problems can include:

Inadequate ventilation

Contamination from inside buildings

Contamination from outside the building

Microbial contamination

Building material contamination

## **INADEQUATE VENTILATION**

Inadequate ventilation occurs when an insufficient amount of fresh outside air is supplied to the interior environment.

Inadequate ventilation can occur when ventilation systems have not been designed to account for building remodeling and or additions.

## **CONTAMINATION FROM INSIDE THE BUILDINGS**

Contaminates commonly found inside buildings include:

Ozone from copiers and fax machines

Pesticides

Cleaning agents

Tobacco smoke

Sewer gas from dry traps

Cosmetics

## **CONTAMINATION FROM OUTSIDE THE BUILDING**

Contaminates commonly found outside of buildings include:

Exhaust from motor vehicles

Fumes from construction or renovation (roofing & street paving projects)

## **BIOAEROSOL CONTAMINATION**

Fungus (mold), a common bioaerosol contamination, occurs in buildings that are susceptible to water leaks and other sources of moisture. Contaminants can also be introduced into buildings from stagnant water in HVAC air distribution systems and cooling towers. In general, prevention of microbiological contamination is accomplished by controlling sources of moisture.

## **BUILDING MATERIAL CONTAMINATION**

Building components treated with a variety of chemicals and preservatives are common sources of indoor air quality problems. Glues and adhesives from new carpeting and formaldehyde, to new particleboard and upholstery, may off-gas and become sources of contamination.

## **SYMPTOMS ASSOCIATED WITH POOR INDOOR AIR QUALITY**

Typical symptoms arising from poor indoor air quality often mimic those symptoms commonly associated with a cold, flu, or allergies. These symptoms may include upper respiratory irritation, congestion, headaches, nausea, fatigue and itchy or watery eyes. According to the EPA, there are two common ailments associated with poor indoor air quality:

**Sick Building Syndrome (SBS)**--This term is used to describe situations in which building occupants experience acute health and comfort effects that appear to be linked to time spent in a building, but no specific illness or cause can be identified. The complaints may be localized in a particular room or zone, or may be widespread throughout the building.

**Symptoms of SBS include:** Headaches, eye, nose, or throat irritation, dry cough, dry or itchy skin, dizziness and nausea, difficulty in concentrating, fatigue, and sensitivity to odors. Most of those affected, report relief after leaving the building. The cause of symptoms is unknown.

**Building Related Illness (BRI)**--In contrast to SBS, BRI is a diagnosable illness that can be attributed directly to airborne building contaminants

**Indicators of BRI include:** Building occupants complain of symptoms such as cough, chest tightness, fever, chills, and muscle aches. The symptoms can be clinically defined and have clearly identifiable causes. Complainants may require prolonged recovery times after leaving the building

**Multiple Chemical Sensitivity:** is another term often used when a person believes they are sensitive to very low concentrations of a variety of chemicals, and the exact diagnosis is rarely defined in this condition.

## **RESPONSE TO INDOOR AIR QUALITY CONCERNS**

A primary goal of this Standard Operating Procedure (SOP) includes actions that focus on identifying and resolving IAQ issues in a manner that prevents them from reoccurring, and avoids the creation of other problems.

### **REPORTING PROCEDURE FOR INDOOR AIR QUALITY CONCERN**

1. Affected employee (occupant) suspects, identifies and/or experiences an indoor air quality concern
2. Affected employee reports issue to immediate supervisor by using “**IAQ Concern Form**”

### **RESPONSE TO INDOOR AIR QUALITY CONCERN**

1. Initial Response

Supervisor (or designee) investigates reported issue and attempts to determine cause and

IF the cause of IAQ issue is identified and confirmed by visual inspection, (i.e. water leak, dirty air filters, level of cleanliness)

2. Supervisor takes corrective action by initiating request for repair or maintenance services.

OR

IF cause of IAQ issue is UNKNOWN or can not be confirmed by visual inspection, then

Supervisor completes "**IAQ Questionnaire**" and submits completed questionnaire to EH&S Coordinator

*THEN*

3. LCSD EH&S Coordinator will initiate IAQ Investigation procedures within 14 days. Supervisors and affected occupants will be kept informed of progress and/or results throughout the investigation process.

### **Initial IAQ Investigation**

1. EH&S Coordinator completes the "**Initial Investigation Form**" for the building/area site for the purpose of identifying and confirming the cause of the IAQ and if confirmed, initiates corrective actions for any cause of the IAQ issue. Then reports results and or corrective action to Director of Maintenance, supervisor and affected employees

*AND MAY*

2. Consult with LCSD Maintenance HVAC department for additional investigation advice/assistance with HVAC system.

*THEN*

3. EH&S Coordinator records results of Initial IAQ Investigation and begins Phase I IAQ Investigation if determined appropriate.

### **Phase I IAQ Investigation**

The Phase I IAQ Investigation is a three step process which is completed by, or with the supervision of the LCSD EH&S Coordinator. The steps include:

1. Interviewing ALL building/area occupants using the "**IAQ Questionnaire**".
2. Performing an additional walk-through inspection of the building/area.
3. Completing IAQ hypothesis form.

The questionnaire is used to obtain information about the nature of the employee complaints and symptoms and also to determine the magnitude of the problem. During the walk-through, building ventilation systems may be evaluated and potential sources of contamination are identified. The IAQ hypothesis form is used to evaluate this data in an attempt to determine the cause or source of the IAQ concern.

If the immediate cause or source for the IAQ concern cannot be identified and confirmed at the completion of Phase I IAQ Investigation, a Phase II IAQ Investigation may be initiated and conducted by or under the supervision of the LCSD EH&S Coordinator.

### ***Phase II IAQ Investigation***

During a Phase II IAQ Investigation, common indoor air quality parameters including temperature, humidity, carbon monoxide and carbon dioxide levels may be measured. The most commonly cited quantitative measurements of indoor air quality are provided by ASHRAE, American Society of Heating and Air Conditioning Engineers, as presented in standard 62-1989.

#### *Carbon Dioxide*

Carbon dioxide (CO<sub>2</sub>), a major product of human respiration, is used as an indicator to evaluate the performance of ventilation systems. Ordinary outside air in urban areas normally contain about 350 to 400 parts per million (ppm). ASHRAE standard 62-1989 (Ventilation for Acceptable Indoor Air Quality) recommends that CO<sub>2</sub> levels be maintained below 1000 ppm.

#### *Temperature*

Temperature ranges of 69 F to 73 F during the heating months and 74 to 77 during cooling months are recommended by the Leon County School District Energy Cost Control Handbook. These guidelines are intended to achieve thermal conditions in a given environment that will provide for the efficient use of our natural resources."

#### *Relative Humidity*

Relative humidity levels can affect the release rate of many indoor contaminants, their concentrations in the air, and the potential growth of microbial organisms. Humidity can also have a direct effect on worker comfort. In ASHRAE 55-1981, a "comfort chart" shows an acceptable range of humidity to be from 20 to 60%.

#### *Carbon Monoxide*

Carbon monoxide (CO) is a colorless, odorless, and toxic gas. Incomplete combustion of liquid fuels (gasoline, kerosene or propane) solid fuels (wood, charcoal, and coal), or natural gas produces CO. Indoor levels of CO are generally similar to levels found in the air outside of the occupied building. The current regulatory permissible exposure limit (PEL) as set by the Occupational Safety and Health Administration (OSHA) is 50 ppm.

If the immediate cause or source for the IAQ issue cannot be identified and confirmed at the completion of Phase II IAQ Investigation, a Phase III IAQ

Investigation may be initiated and conducted by or under the supervision of the LCSD EH&S Coordinator.

### ***Phase III IAQ Investigation***

A Phase III IAQ Investigation is performed when a definitive cause for the symptoms cannot be determined from previous investigations. Phase III IAQ Investigations consist of extensive and more specific monitoring and sampling for chemical and /or microbial contaminants in accordance with Building Air Quality – A guide for Building Owners and Facility Managers methodologies, standard and customary industrial hygiene practices and NIOSH and OSHA sampling and analytical procedures.

All results, conclusions and recommendations will be documented and reported to all effected employees. If the immediate cause or source for the IAQ issue cannot be identified and confirmed at the completion of Phase III IAQ Investigation and employee/occupant concerns still exist, expertise from outside Leon County Schools MAY become involved.

### **OCCUPANCY OF WORKPLACE WITH IAQ CONCERN(S)**

Leon County School District will initiate actions to maintain a safe workplace by evaluating and controlling recognized hazardous conditions and activities that may cause injury to an employee. The response to, and evaluation of workplace safety related to IAQ issues will rely on the Leon County School District IAQ standard operating procedure (SOP) & applicable elements of Occupational Safety and Health Administration, American Society of Heating, Refrigeration and Air conditioning Engineers, Environmental Protection Agency, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and National Institute for Occupational Safety and Health standards and recommendations.

### **RECORD KEEPING**

The EH&S Coordinator will maintain all indoor air quality forms and reports on file for future reference. The EH&S Coordinator investigates indoor air quality complaints and distributes written final reports to affected parties.

## **APPENDIX**

- A- IAQ Concern Form
- B- IAQ Questionnaire
- C- Initial Investigation Form



LCSD Maintenance Department  
EH&S Coordinator  
3420 W. Tharpe Street Suite 200  
Tallahassee, FL 32303  
Phone: 617-1777 Fax: 617-1789  
email: greenc@leonschools.net

## INDOOR AIR QUALITY (IAQ) Concern Form

### INSTRUCTIONS

**This form is a component of the Leon County Schools Indoor Air Quality (IAQ) policy. Use this form to report to your supervisor any concerns you have related to the indoor air quality/environment in your workplace. Indoor air quality concerns may include issues with temperature, humidity, ventilation, odors, or air pollutants that may be causing health or discomfort symptoms. If you have questions when completing this form, contact LCSD EH&S Coordinator at 617-1777. When completed, deliver to your immediate supervisor.**

### GENERAL INFORMATION

Building Name:	Date:
Room Number:	Name:
Department:	Title:
Floor Level:	Phone No:
Employment Status: <input type="checkbox"/> FT - <input type="checkbox"/> PT	hrs/week – <b>other</b> hrs/week

### CONCERN INFORMATION

What is the nature of the problem?:

Where is the problem experienced (in one or more locations)?

When was the problem first experienced?

When does it occur or when is it the worst (time of day, day of week, related to certain activities/events)?

What do you think is the cause of the IAQ concern?

Other comments:

We may need to contact you to discuss your concern.  
What is the best time to reach you?

**Please deliver completed form to your Supervisor**

### IAQ COORDINATOR USE ONLY

File Number	Received By	Date Received
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LCSD Maintenance Department  
 EH&S Coordinator  
 3420 W. Tarpe Street Suite 200  
 Tallahassee, FL 32303  
 Phone: 617-1777 Fax: 617-1789  
 Email: greenc@leonschools.net

## INDOOR AIR QUALITY (IAQ) QUESTIONNAIRE

### INSTRUCTIONS

This form is required to initiate an Indoor Air Quality (IAQ) investigation. If you have questions when completing this form, contact LCSD EH&S Coordinator, 617-1777.

### DESCRIPTION

Briefly describe the IAQ concern:

### GENERAL INFORMATION

Building Name:		Date:	
Room Number:		Name:	
Department:		Title:	
Floor Level:		Phone No:	

### DESCRIPTION OF IAQ CONCERN

When did the IAQ concern start?		Is the concern resulting in lost work hours?:
Indicate the number of employees that have expressed an IAQ concern?		
Describe all symptoms reported (check all that apply)	<input type="checkbox"/> Nasal <input type="checkbox"/> Throat <input type="checkbox"/> Eye <input type="checkbox"/> Respiratory <input type="checkbox"/> Skin <input type="checkbox"/> Pain <input type="checkbox"/> Other (describe)	
Describe the IAQ concern as reported (check all that apply)	<input type="checkbox"/> Too Hot <input type="checkbox"/> Too Cold <input type="checkbox"/> Too humid <input type="checkbox"/> Too dry <input type="checkbox"/> Drafty <input type="checkbox"/> Too stale <input type="checkbox"/> Dusty <input type="checkbox"/> Moisture/flood <input type="checkbox"/> Odor: { <input type="checkbox"/> Sewer, <input type="checkbox"/> Mold, <input type="checkbox"/> Chemical} <input type="checkbox"/> Other (describe)	
Does housekeeping services keep the area clean?		

### TIMING PATTERNS

When is the IAQ concern "at its worst?" (check all that apply)	<input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> R <input type="checkbox"/> F <input type="checkbox"/> AM <input type="checkbox"/> PM <input type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/> Fall <input type="checkbox"/> Winter
Does the IAQ concern go away?      If so, when?	
How often is the IAQ concern occurring? <input type="checkbox"/> once <input type="checkbox"/> 1/year <input type="checkbox"/> 1/month <input type="checkbox"/> 1/week <input type="checkbox"/> other (describe)	
Have you noticed any other events that tend to occur around the same time as the IAQ concern?	

### SPACIAL PATTERNS

Briefly describe your areas work function and associated activities:
Have any activities changed or been initiated in the area? <input type="checkbox"/> Construction/remodeling <input type="checkbox"/> Increase/decrease in # of occupants in area <input type="checkbox"/> New furniture <input type="checkbox"/> New equipment <input type="checkbox"/> Heating or cooling system (describe) <input type="checkbox"/> Housekeeping (describe)

### ADDITIONAL INFORMATION

What do you think is the most likely cause for the IAQ concern?
Do you have any additional information about the IAQ concern?

### IAQ Coordinator USE ONLY

File Number	Received By	Date Received
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