



Indoor Environmental Quality (IEQ) Guidelines

Foreword	2
Sample IEQ Decision Steps: <i>Report, Investigate, Mitigate, Verify</i>	3
IEQ Complaint Response Elements: <i>Prevent, Train, Document</i>	4
IEQ Complaint Classes (<i>Types</i>)	5
IEQ Complaint Class 1: <i>Odors</i>	6
IEQ Complaint Class 2: <i>Mold</i>	7
IEQ Complaint Class 3: <i>Temperature & Humidity</i>	8
IEQ Complaint Class 4: <i>Ventilation</i>	9
Appendix A: <i>Sample Indoor Environmental Quality (IEQ) Checklist</i>	10
Appendix B: <i>Sample IEQ District Follow-up Form (DISTRICT USE ONLY)</i>	11
Appendix C: <i>Sample IEQ Checklist (DISTRICT USE ONLY)</i>	12

FOREWORD

The health, comfort, and learning environment of students and staff is important. An indoor environmental quality (IEQ) plan is a strategy used to identify and remediate poor air quality in schools¹ which includes a comprehensive, district-specific set of policies and procedures designed to maintain and improve the quality of the indoor environment for all occupants of the district's facilities.

More than 25 million children—*nearly 50% of America's students*—attend schools that have not adopted an IEQ plan. These plans are not mandatory for schools but are considered best practices.²

IEQ plans such as the frameworks provided in the [U.S. EPA's IAQ Tools for Schools](#) action kit and [California's Division of the State Architect Indoor Environmental Quality for Sustainable Schools](#) empower schools to benefit from best practices and proven approaches and strategies which advance environmental health in schools³.

The purpose of these guidelines is to assist districts in defining protocols and to provide guidance in addressing environmental health issues which may include physical, chemical, or biological issues encountered in the school environment.

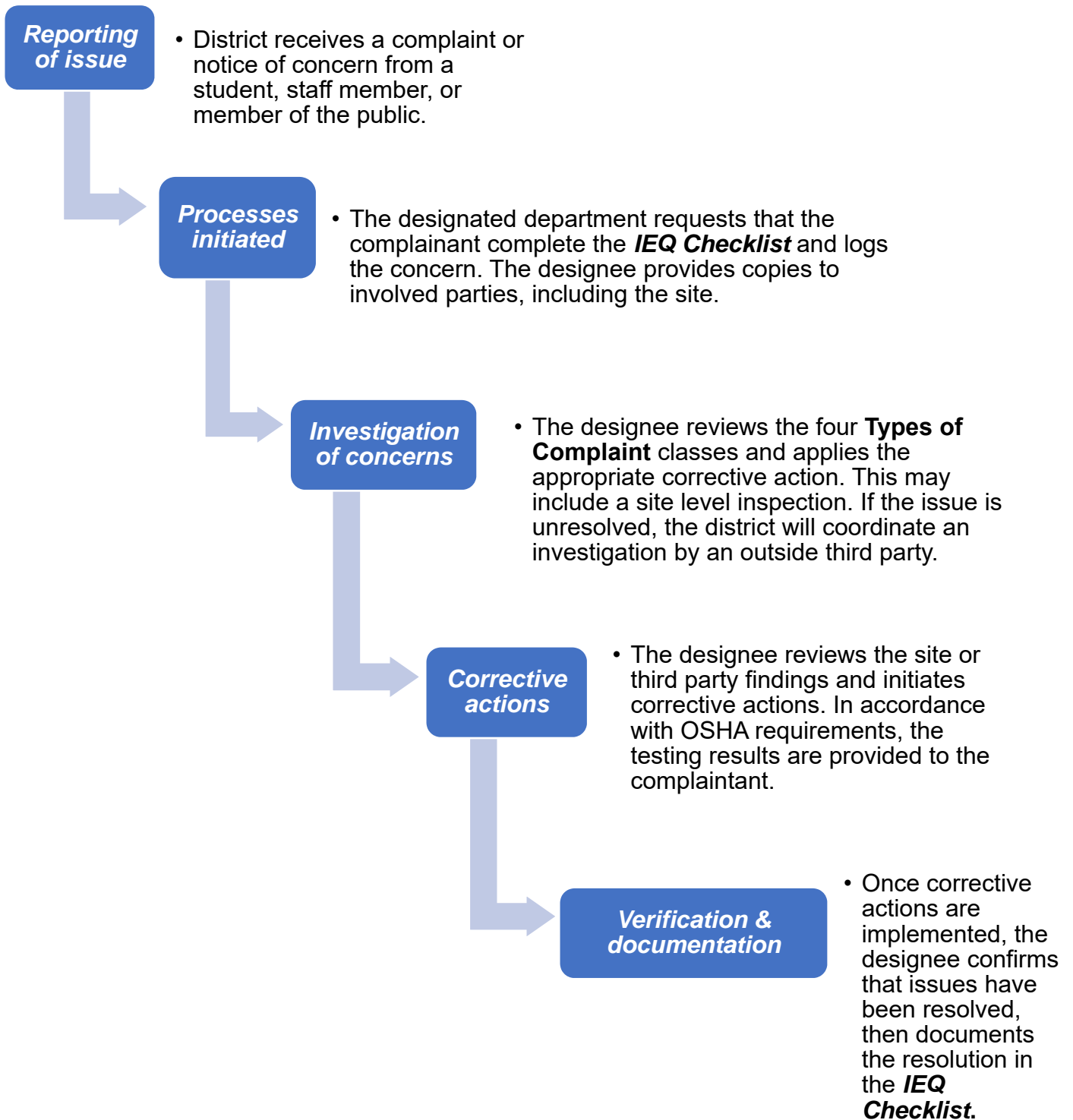
Several regulatory documents, including the Environmental Protection Agencies "[Tools for Schools.](#)" were used in developing these IEQ guidelines. This program is not inclusive of all potential environmental health issues and is limited to those specifically addressed.

¹ U.S. Environmental Protection Agency. "EPA Releases Guidance to Improve Schools' Air Quality and Energy Efficiency". Press Release. November 26, 2014. [Epa-releases-new-indoor-air-quality-and-energy-efficiency-guidance-for-schools.](#)

² According to the Centers for Disease Control and Prevention's School Health Policies and Practices Study, the number of schools reporting implementation of IAQ management programs dropped from 47.7% in 2012 to 46.1% in 2014.

³ Environmental Law Institute. School IAQ management programs. Overview of state laws. See [School IAQ mgmt program 2015.pdf](#)

SAMPLE IEQ DECISION STEPS



IEQ COMPLAINT RESPONSE ELEMENTS

Prevention Element

The district should implement programs to help minimize environmental health concerns which include staff assistance to identify potential environmental concerns. Staff observations and work practices are critical to ensure IEQ issues are addressed in a timely manner.

Training Element

In order to support proper implementation of the program, training should be conducted on an annual basis as indicated in the table below.

Audience	Content	Documentation & Compliance
Risk Management & Environmental Safety	Managing & resolving environmental health issues, including common hazards, investigative methods, corrective actions & prevention strategies	<ul style="list-style-type: none"> • In-person or live web session. • Training by an appropriately qualified environmental health professional (e.g., CIH, CIAP, etc.). • Documented attendance.
Site Responders	Conducting in-house investigations & common in-house corrective actions, including reviewing response procedures, forms & issue response guidelines.	<ul style="list-style-type: none"> • In-person or live web session, if available. • Training by Risk Management or designee. • Documented attendance with copy of presentation materials.
All Employees	When & how to report environmental health concerns. Preventative work practices to help avoid environmental health issues	<ul style="list-style-type: none"> • Preventative Work Practices – All Staff in annual employee notification • OSHA SHP Recommended Practices.pdf

Documentation Element

The district should develop, prepare, and keep records which document indoor environmental quality issues. A sample form is included as [Appendix A](#) which captures relevant information and another to document district follow-up activities. Finally, sample indoor air quality checklist is also available to proactively maintain the quality of the indoor environment for all occupants.

IEQ COMPLAINT CLASSES (TYPES)

01 Odors

While unpleasant or strong odors are sometimes annoying but nonhazardous, they can also be irritating and symptomatic. It is important to determine and eliminate the source of such odors.

02 Mold

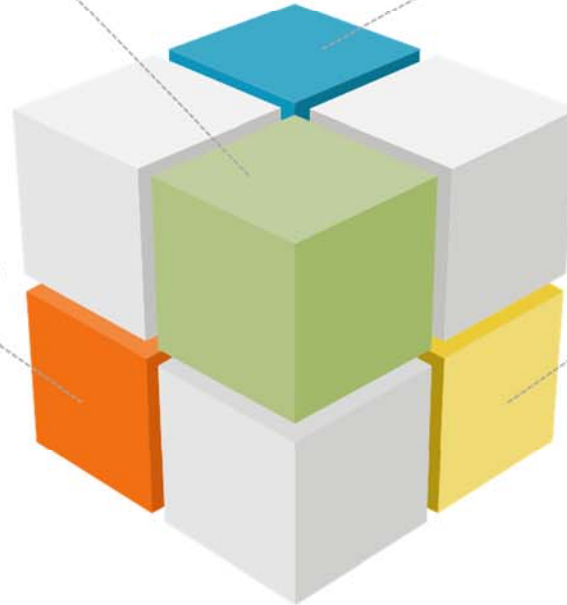
Molds naturally grow and flourish almost everywhere, both indoors and outdoors. Generally, however, occurrences of mold are not a problem, unless these growths are indoors. Some people are sensitive to certain molds. A major cause of mold growth is moisture. The best way to control mold growth is to identify and eliminate moisture sources in the environment.

04 Inadequate Fresh Air

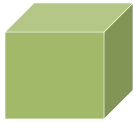
Inadequate fresh air is often the problem when people claim that buildings are making them sick. 'Sick building syndrome' can usually be cured by installing and using a properly sized HVAC system which provides an adequate fresh air supply.

03 Temperature & Humidity

Extremes in temperature and humidity can exacerbate health problems which impact productivity. Ensuring use of a properly sized HVAC system which is adjusted and monitored for proper ventilation, humidification level, and temperature can help maximize productivity.



IEQ COMPLAINT TYPE 1: ODORS



ODORS

Track down source:

1. Describe the odor
2. Where does it seem strongest?
3. When does it seem strongest—*time of day, weather factors, time of year?*
4. Any recent changes in the environment, such as new furniture or carpet?

Correct the problem:

1. Improper ventilation. Bring in more fresh air and improving air turnover rate may eliminate it.
2. Poorly located air handler. For example, a return air intake located inside or adjacent to a janitorial closet.
3. Other causes. For example, the presence of something that doesn't belong in the building (*a dead animal, mold, forgotten lunches, overwatered house plants, or improper chemical usage*). In these cases, identify, remove, and properly clean the source.

IEQ COMPLAINT TYPE 2: MOLD



MOLD

Sources of complaints include students and staff who blame mold contamination for coughing, sneezing, headaches, wheezing, itchy eyes, etc.

1. Determine why they think there is a mold
2. Determine what their symptoms are, if any
3. Determine whether they've seen something suspicious
4. Determine what time of day they're experiencing symptoms or seeing evidence
5. Determine where in the building symptoms and/or evidence are most obvious

If mold is found, correct the problem:

1. Determine cause of mold, then take corrective action.
2. Eliminate moisture (e.g., *air conditioning condensate collection pans, water leaks*)
3. Eliminate organic matter (*such as moist ceiling tiles, particle board, or accumulated debris*).
4. Properly clean up the mold. In most cases, disinfecting surfaces is sufficient. In extreme mold exposures, cutting out the contaminated surfaces before replacing them, and then conducting air sampling, may be warranted.

IEQ COMPLAINT TYPE 3: TEMPERATURE & HUMIDITY



TEMPERATURE & HUMIDITY

Source:

- A building that is too hot, too cold, too humid, or too dry can impact productivity and cause health problems. Dryness can be a fire hazard in an industrial setting where static can cause electrical arcs. High humidity can lead to mold, bacteria, or fungal growths.

Correct the problem:

- Examine your heating and cooling system, ensure it is properly sized for your building's use, and adjust the amount of ventilation and humidification/dehumidification to balance temperature and humidity needs.

IEQ COMPLAINT TYPE 4: VENTILATION



INADEQUATE FRESH AIR

Source:

- When people complain that a building is making them sick, frequently the problem is inadequate fresh air introduction into the HVAC system (e.g., high concentration of CO₂ (carbon dioxide) can occur when a building's systems had never been intended to serve so many occupants at once)
- By multiplying air velocity (v) by the cross section area of a duct (A), you can determine the air volume (Q) flowing past a point in the duct per unit of time ($Q = vA$). Volume flow is usually measured in Cubic Feet per Minute (CFM). An HVAC system should provide 10 CFM fresh outside air for each occupant plus 0.12 CFM fresh outside air per square foot of the room.

If volume flow is inadequate, correct the problem:

- Install a properly sized HVAC system with an adequate amount of fresh air supply.

APPENDIX A: SAMPLE INDOOR ENVIRONMENTAL QUALITY (IEQ) COMPLAINANT FORM

Complainant Information

Complainant Name: _____ Date: _____

School Name & Building: _____

Room Number & Specific Area within the Room: _____

Complainant relationship to District:

Student Staff/Faculty Visitor/Other Phone: _____

Where are you when symptoms are experienced? _____

Where do you spend most of your time in the building? _____

Symptoms/Reasons for Reporting

What are your primary observation(s)/chief complaint(s)? _____

Describe any symptoms or discomforts experienced. _____

Are you aware of others with similar symptoms? Yes No

If yes, list names and contact information: _____

What do you think the possible cause(s) are or have you observed any building conditions that might need attention (e.g. temperature, humidity, drafts, mold, chemicals, or odors)? _____

Do you have any health conditions aggravated by environmental problems?

- | | | |
|---|---|---|
| <input type="checkbox"/> Contact lenses | <input type="checkbox"/> Chronic cardiovascular disease | <input type="checkbox"/> Chemo or radiation treatment |
| <input type="checkbox"/> Allergies (Describe) | <input type="checkbox"/> Chronic respiratory disease (Asthma) | <input type="checkbox"/> Immune system deficiencies |
| <input type="checkbox"/> Chronic neurological disease | <input type="checkbox"/> Sinus Infection | <input type="checkbox"/> Other |

Have you sought medical attention/seen the school nurse: Yes No Do you smoke: Yes No

Describe any changes specific to your classroom, office, or area of concern in the past 3 months (new carpeting, new furniture, etc.)? _____

Describe any odors, smells, or observations: _____

- | | | |
|--|--|--|
| <input type="checkbox"/> No noticeable smell | <input type="checkbox"/> Natural gas | <input type="checkbox"/> Sewer gas smell |
| <input type="checkbox"/> Wet dirt | <input type="checkbox"/> Burning odor | <input type="checkbox"/> Chemical smell |
| <input type="checkbox"/> Musty odor | <input type="checkbox"/> Other (e.g., discoloration) _____ | |

Time/Duration

When did the symptoms start? _____

When are they the worst? _____ Do they go away? If so, when? _____

Have you noticed any other events (weather, temperature, humidity, construction) that could have contributed to their symptoms (describe)? _____

APPENDIX B: SAMPLE INDOOR ENVIRONMENTAL QUALITY (IEQ) DISTRICT FOLLOW-UP FORM (DISTRICT USE ONLY)

Room Condition

Does the room have a history of water intrusion? Yes No If yes, please provide details regarding the specific event and the date(s). _____

Any changes to the condition of the room OR in the area by the room? Example, new carpet installed, carpet recently cleaned, etc. Yes No If yes, please provide details regarding the specific event and the date(s). _____

What date was the room deep cleaned? _____

Heating Ventilation Air Conditioning (HVAC)

What date was the HVAC serviced? _____

What date were the ducts cleaned? _____

What type of filter is used? What is its MERV rating? _____

What date was the filter changed? _____

ASHRAE standards require the HVAC system is set to operate as follows:

- All economizer/fresh air dampers should be fully open and supply sufficient fresh outside air, as a rule-of-thumb, this should be 15 to 20% fresh outside air, regardless of the need for heating or cooling.
- The existing HVAC system should provide 10 cubic feet per minute (CFM) fresh outside air for each occupant plus 0.12 CFM fresh outside air per square foot of the room.
- HVAC system should be turned 1 hours prior to occupancy, should be on continuously throughout the day, and stay on 1 hours after the room is no longer occupied on a normal work day, **except following breaks of two or more days** HVAC system should be turned on 2 hours prior to occupancy, should be on continuously throughout the day, and stay on 1 hours after the room is no longer occupied.

Can you confirm that the HVAC system is operating according to ASHRAE standards?

Notes: _____

How have the concerns in the room been addressed? Staff Assigned: _____ Date resolved: _____

Actions taken: _____

APPENDIX C: SAMPLE INDOOR ENVIRONMENTAL QUALITY (IEQ) CHECKLIST (DISTRICT USE ONLY)

1. GROUND LEVEL

	Yes	No	N/A
1a. Checked that offices are dusted and vacuumed regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1a. Checked that ventilation units operate properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1b. Checked there are no obstructions blocking air intakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1c. Checked for nests and droppings near outdoor air intakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1d. Determined that dumpsters are located away from doors, windows, and outdoor air intakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1e. Checked potential sources of air contaminants near the building (chimneys, stacks, industrial plants, exhaust from nearby buildings)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1f. Checked that vehicles avoid idling near outdoor air intakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1g. Minimized pesticide application	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1h. Ensured that there is proper drainage away from the building (including roof downspouts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1i. Ensured that sprinklers spray away from the building and outdoor air intakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1j. Ensured that walk-off mats are used at exterior entrances and that they are cleaned regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. ROOF

While on the roof, consider inspecting the HVAC units (use the Ventilation Checklist).

2a. Checked that the roof is in good condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2b. Checked for evidence of water ponding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2c. Checked that ventilation units operate properly (air flows in)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2d. Checked that exhaust fans operate properly (air flows out)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2e. Checked that air intakes remain open, even at minimum setting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2f. Checked for nests and droppings near outdoor air intakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2g. Checked that air from plumbing stacks and exhaust outlets flows away from outdoor air intakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. ATTIC

3a. Checked for evidence of roof and plumbing leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3b. Checked for birds and animal nests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. GENERAL CONSIDERATIONS

4a. Checked that temperature and humidity are maintained within acceptable ranges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4b. Checked that no obstructions exist in supply and exhaust vents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4c. Checked for odors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4d. Checked for signs of mold and mildew growth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4e. Checked for signs of water damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4f. Checked for evidence of pests and obvious food sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4g. Noted and reviewed all concerns from school occupants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. BATHROOMS AND GENERAL PLUMBING

- 5a. Checked that bathrooms and restrooms have operating exhaust fans.....
- 5b. Checked proper drain trap maintenance:
 - Water is poured down floor drains once per week (approx. 1 quart of water).....
 - Water is poured into sinks at least once per week (about 2 cups of water)
 - Toilets are flushed at least once per week.....

6. MAINTENANCE SUPPLIES

- 6a. Checked that chemicals are used only with adequate ventilation and when building is unoccupied
- 6b. Checked that vents in chemical and trash storage areas are operating properly.....
- 6c. Ensured that portable fuel containers are properly closed
- 6d. Checked that power equipment, like lawn mowers, have been serviced and maintained according to manufacturers’ guidelines.....

7. COMBUSTION APPLIANCES

- 7a. Checked for combustion gas and fuel odors
- 7b. Ensured that combustion appliances have flues or exhaust hoods.....
- 7c. Checked for leaks, disconnections, and deterioration
- 7d. Ensured there is no soot on inside or outside of flue components

8. OTHER

- 8a. Checked for peeling and flaking paint (if the building was built before 1980, this could be a lead hazard).....

How have the concerns in the room been addressed? Staff Assigned: _____ Date resolved: _____

Actions taken: _____

