

A group of diverse children, including boys and girls of various ethnicities, are shown from the chest up, holding hands in a circle. They are all smiling and looking towards the camera. The background is a soft, out-of-focus light color.

# Using Home Environmental Assessments for Effective Patient Care: A Panel Discussion

Panel:

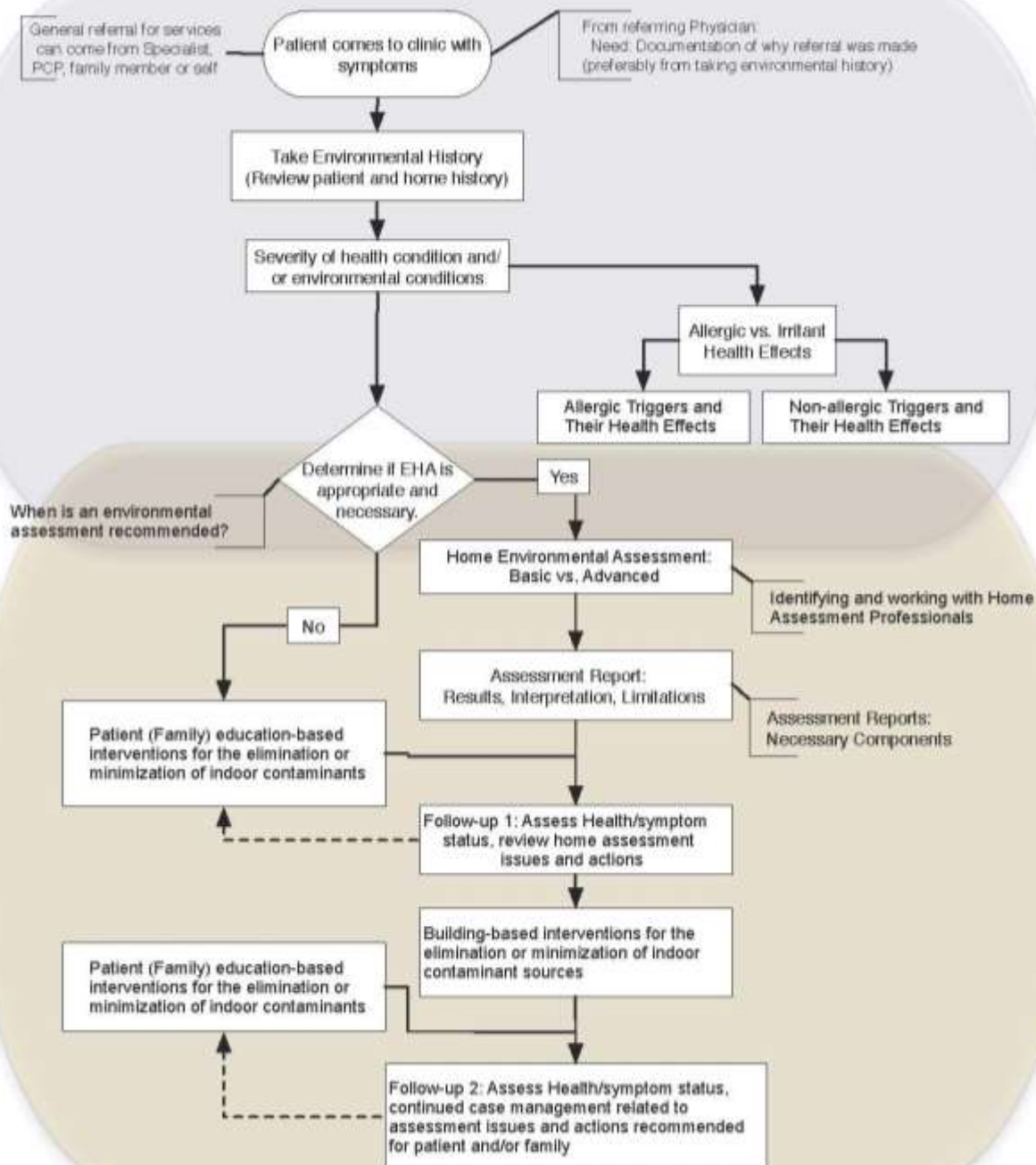
Jay Portnoy, MD, Children's Mercy Hosp.

Jim Sublett, MD Family Allergy

Kevin Kennedy, MPH, CIEC, Children's Mercy Hosp.

Carl Grimes, CIEC, Healthy Habitats

# Home Environmental Health Assessment Algorithm



General referral for services can come from Specialist, PCP, family member or self

Patient comes to clinic with symptoms

From referring Physician:  
Need: Documentation of why referral was made (preferably from taking environmental history)

Take Environmental History  
(Review patient and home history)

Severity of health condition and/  
or environmental conditions

Allergic vs. Irritant  
Health Effects

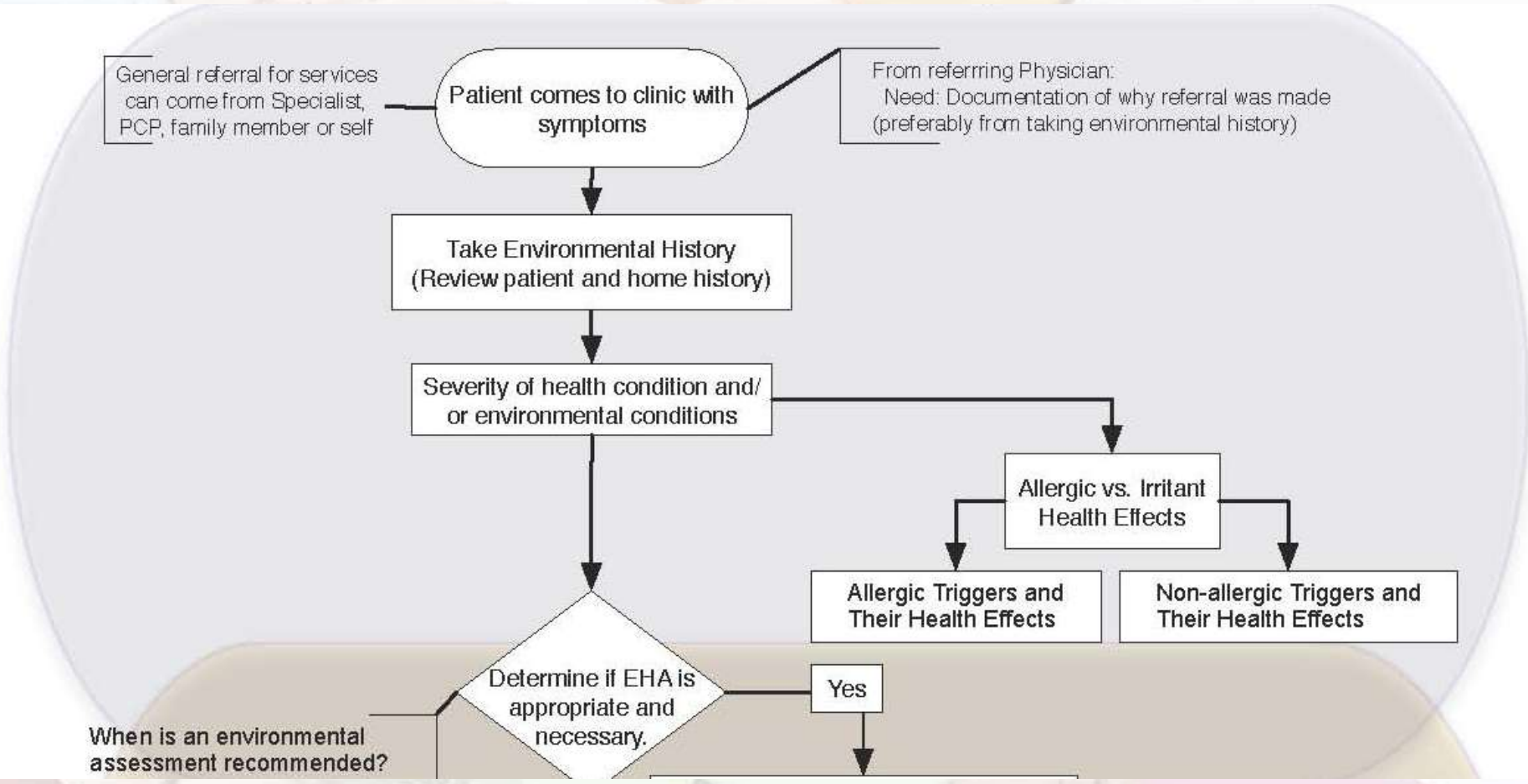
Allergic Triggers and  
Their Health Effects

Non-allergic Triggers and  
Their Health Effects

Determine if EHA is  
appropriate and  
necessary.

Yes

When is an environmental  
assessment recommended?



# Case Discussion

- 5 year old Hispanic male accompanied by mother and grandmother.
- Chief complaint: cough and nasal congestion since age 1.
- Symptoms are year round, worse this fall.
- Referred by school nurse after missing several days of school since starting Kindergarten this year.
- Teacher reports “wheezing” when running.

A group of diverse children of various ethnicities and ages are huddled together in a circle, smiling and looking at each other. The image is slightly faded and serves as a background for the text.

# Environmental History:

- Patient Medical History
- Patient's symptoms and Health Concerns
- Environmental History
  - Home, Work,
- Relevant Clinical Testing

# Case discussion 1 (continued)

- Past Medical History: Negative
- Family History:
  - Mother has frequent bronchitis that seems to have gotten worse this past year.
  - She never had this problem when she lived in Columbia.

# Case discussion (continued)

- Lives in apartment with mother, father, grandmother and 2 younger siblings (all the children share a bedroom)
- Indoor cat
- Grandmother smokes
- Father is an exercise rider at horse track
- Forced air gas furnace
- Window air conditioner
- Use vaporizer in bedroom for younger siblings nose congestion

# Case discussion (continued)

- Physical Exam:
  - allergic shiners,
  - edematous nasal mucosa
  - chest is clear.



- Pulmonary function tests
  - positive for asthma

# Case discussion (continued)

- Allergen prick testing:
  - strong positives to dust mite
  - Mucor
  - *Aspergillus* & *Penicillium* molds
  - Cockroach
  - horse & mouse
  - (negative to cat)



# More Environmental History

- Have lived in second floor apartment, owned by the race track, for about two years.
- Wall to wall carpeting which they shampoo with a rented scrubber about every 6 months.
- Furnace in closet; not sure about the filter, but know the maintenance man has changed it about 6 months ago.
- Had a pipe leak in the bathroom that was repaired.
- In August 2009, after a 10" rain the entire neighborhood and lower floor of the building was flooded during flash floods.

# Physician/Environmental Professional Referral and Consult:

## Physician and Health Care Providers:

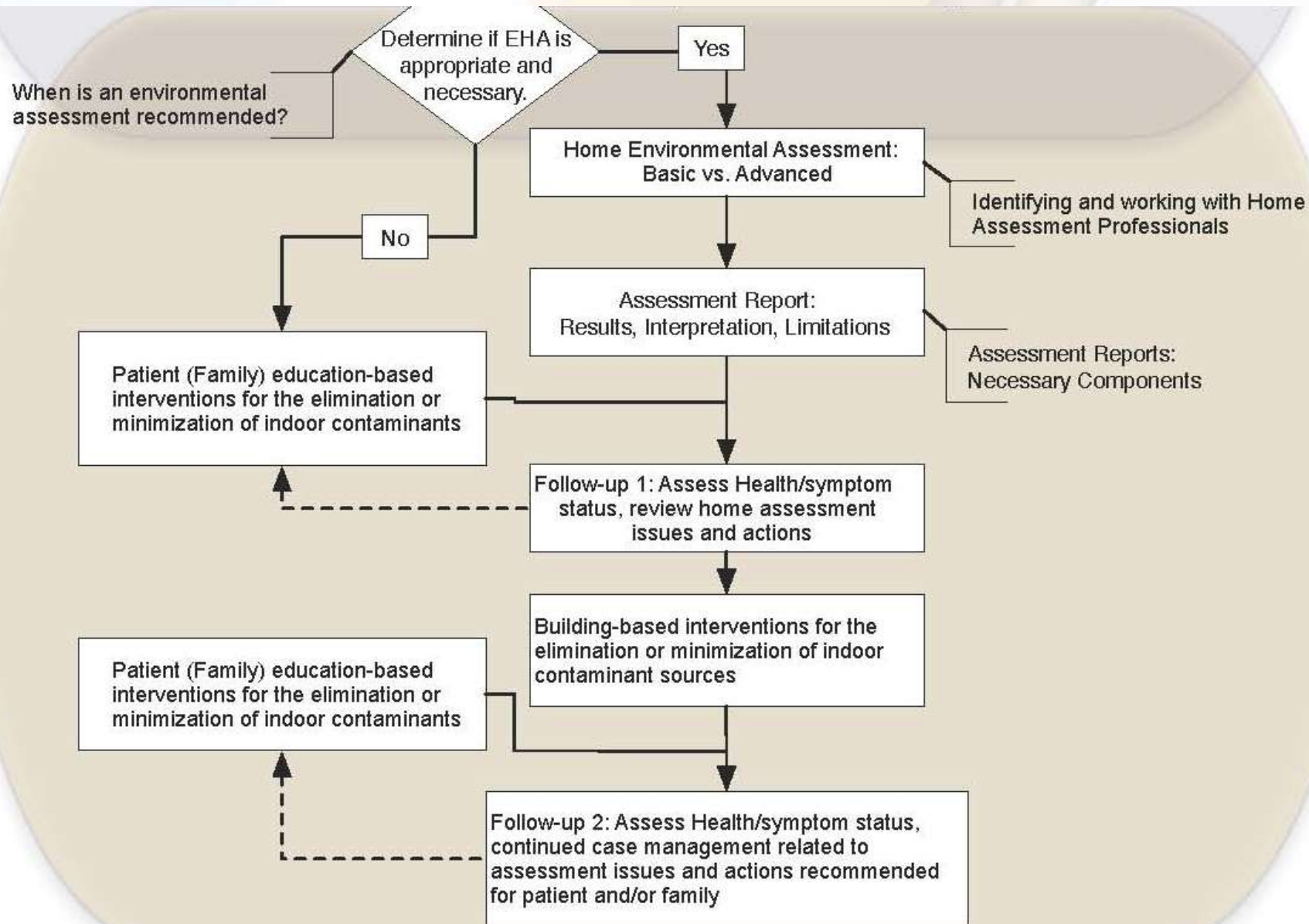
- Education and triage
- Health & Environmental History
- Referral and Communication

## Environmental Professional

- Visual Assessment & In-home Education
- Environmental Measurement & Sampling
- Assessment Reporting with Issues & Actions

## Both

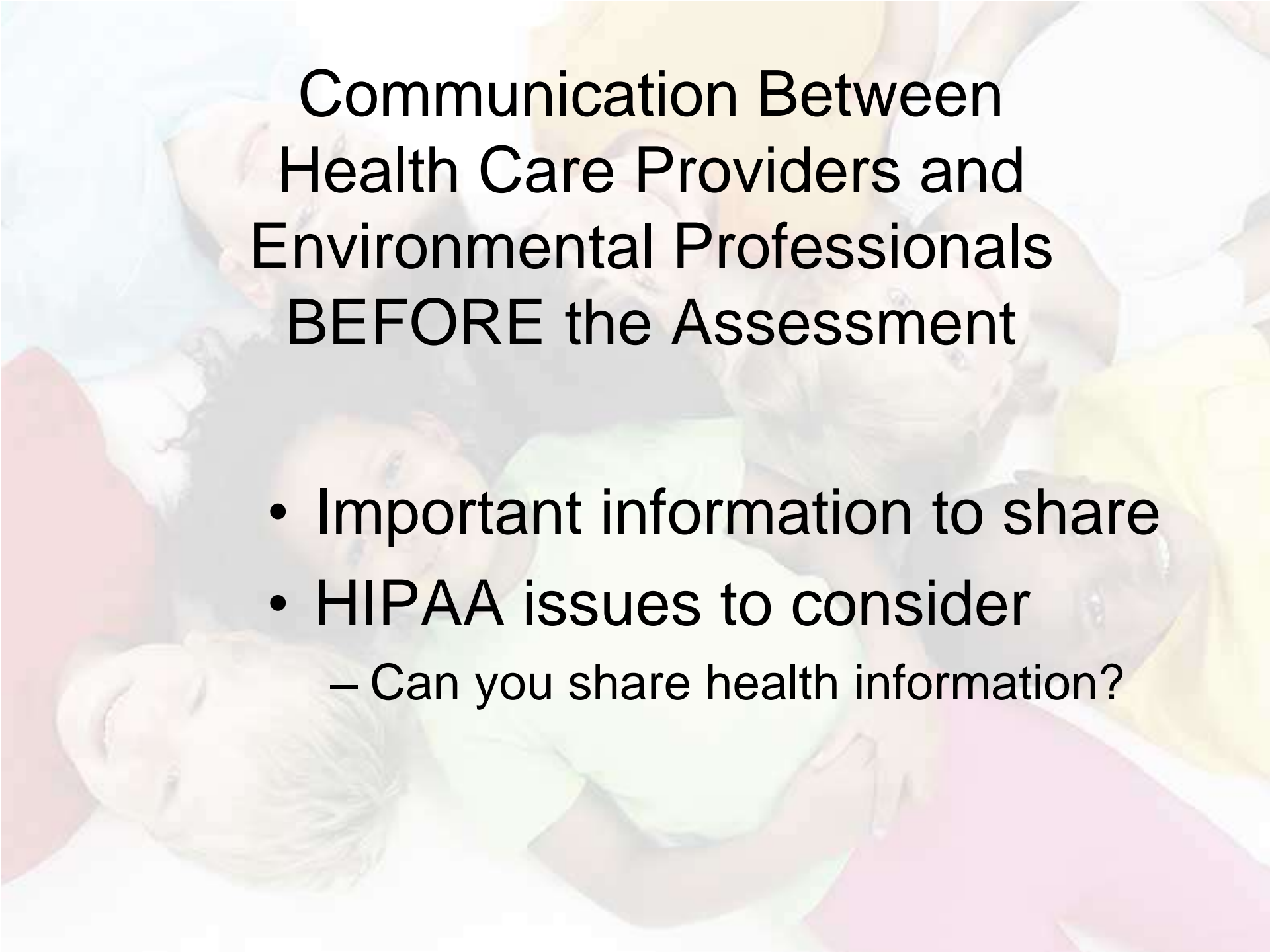
- Hypothesis Generation
- Follow-up & Case Management



# Finding Qualified Home Environmental Assessment Professionals

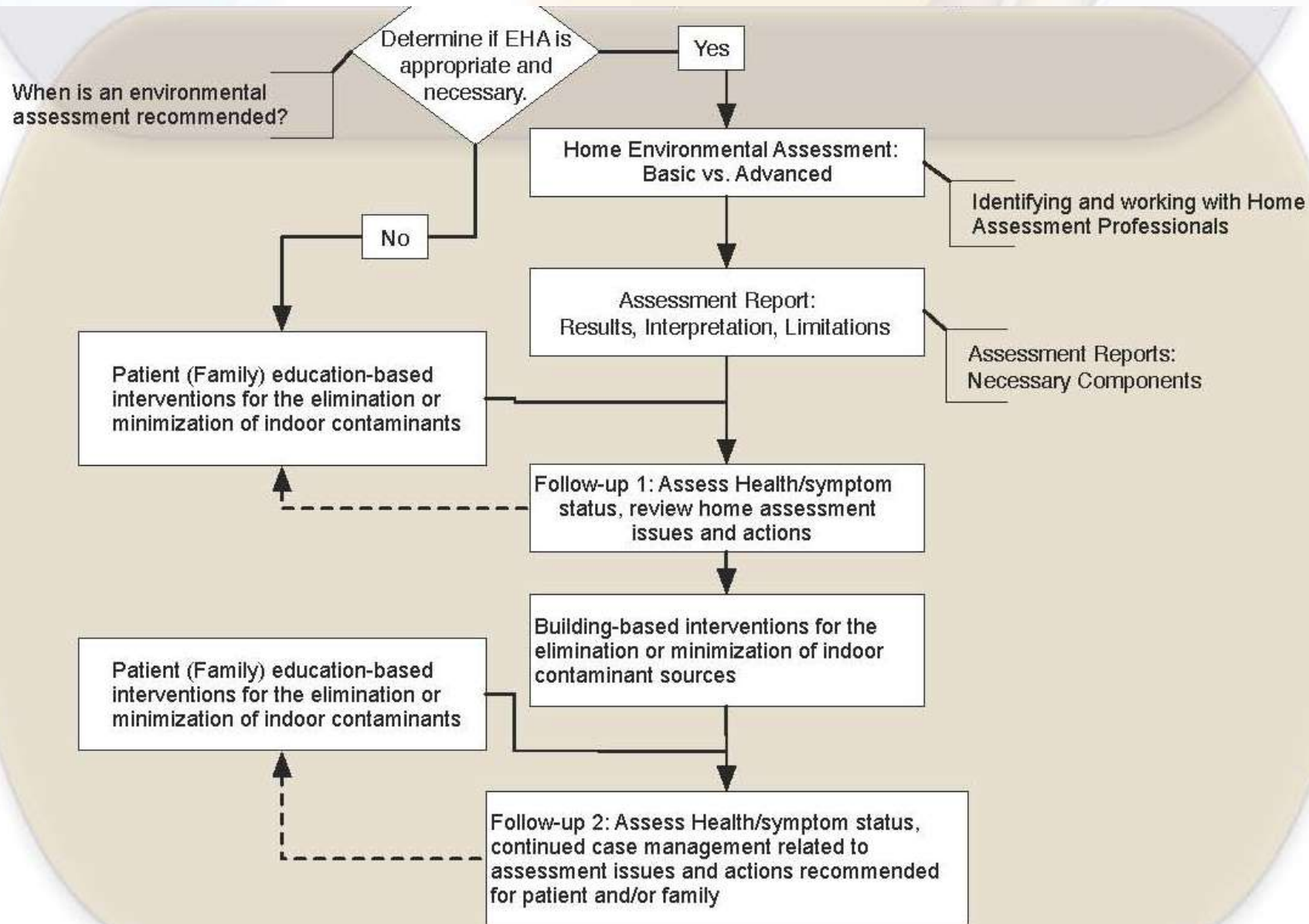
## Key things to look/ask for:

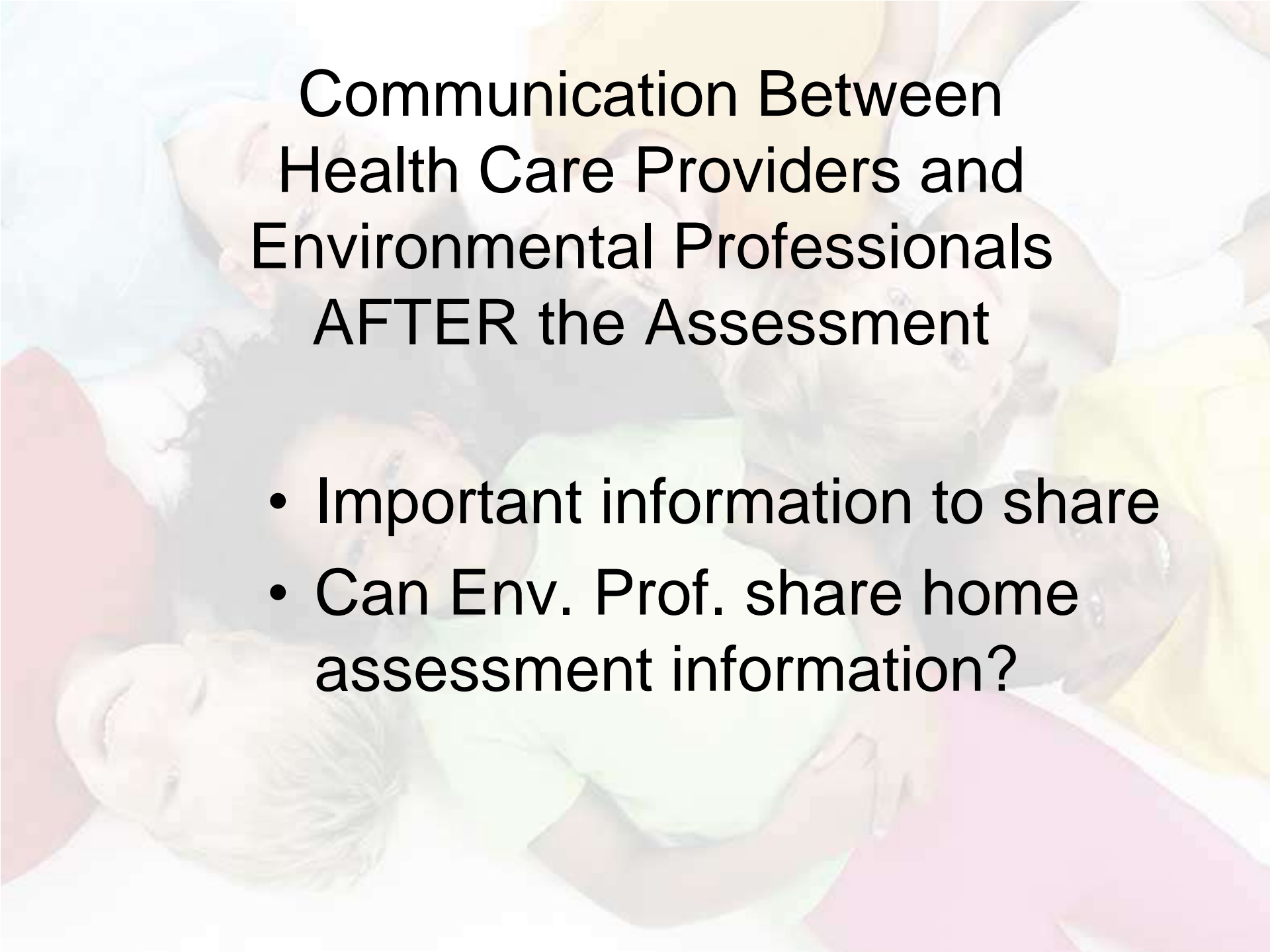
- Certification from established organizations
- References
- Samples of scope of work, contracts, and assessment reports

A top-down view of a diverse group of people sitting in a circle, looking towards the center. The image is semi-transparent, allowing the text to be clearly visible. The people are of various ethnicities and are dressed in casual to professional attire. The background is a soft, light-colored gradient.

# Communication Between Health Care Providers and Environmental Professionals BEFORE the Assessment

- Important information to share
- HIPAA issues to consider
  - Can you share health information?



A group of diverse people, including men and women of various ethnicities, are seated around a table. They appear to be in a meeting or collaborative discussion, with some looking towards the center and others looking towards the camera. The background is a soft, out-of-focus light color.

# Communication Between Health Care Providers and Environmental Professionals AFTER the Assessment

- Important information to share
- Can Env. Prof. share home assessment information?

# Assessment Reports Should Include:

- A Scope or Work
- Hypothesis of Assessment
- The limitation of the assessment
- Summary of any Test Results
- Interpretation of measurements
- Photos of issues identified
- Recommendations
- References

# Summary of Analytical Results

- Should discuss results as they relate to standards used to establish criteria for action.

## Recommendations

- Recommendations should be based on the measurements and testing data if any was gathered

EHA ID # : 200227 Date of Site Visit: Wednesday, October 9, 2002

### 4.0 Summary of Analytical Results and Recommendations

#### Results and Discussion of Sample Analyses

Results of the environmental health assessment indicate that there is no evidence of significant indoor air quality problems. Carbon dioxide levels measured throughout the house were below 1000 ppm. The recommended indoor air level for CO<sub>2</sub> is less than 1000 ppm. Relative Humidity (RH) throughout the house was within the recommended range of 30 - 50%. Outdoor humidity was 39%.

Five other indoor air gases were analyzed on-site. They were carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), and total volatile organic compounds (TVOCs). None of these were detected during this assessment.

Air sampling for fungal spores showed no significant level of airborne fungal spores anywhere in the house. The ratio of indoor to outdoor spores was also very low. Some of the fungi identified had ratios greater than 10, however, the actual spores detected were very low and do not represent a health concern.

Tape lift samples taken from two locations of visible mold confirmed the presence of fungal contamination. The tape lift from the basement drywall did indicate the presence of stachybotrys on the back of the wet and damaged drywall sampled. This is a fungal genus associated with significant health problems and should be remediated as soon as possible. The other sample was taken from a small area behind the washing machine. Aspergillus/Penicillium, along with other molds, were detected in this sample. This is also a rare fungus, but the area effected is very small and could be easily cleaned up. Wall moisture readings taken behind the washing machine and on the drywall of the basement ceiling below this area had high moisture levels (> 20%) indicating a significant leak behind the wall.

#### Recommendations

The results of this assessment indicate that there appear to be some specific home environmental health concerns for this family. On-site measurements of IAQ parameters did not indicate an indoor air problem. However, the overflowing water from the washer drain has created an area of water-damaged and moist drywall that although not directly visible, is heavily contaminated on the back side with fungal genera considered unhealthy. The area effect represents a level III contamination according to New York City Department of Health (NYDOH) guidelines. Until conditions change, occupancy of the area by anyone should be avoided. As a guideline for remediation, a summary of the NYDOH Protocol for mold remediation is provided in appendix F of this report. Remediation should be performed following this, or a similar protocol, by qualified personnel using the appropriate personal protective equipment. Items in the basement should be examined by the family to determine whether they need to be cleaned or thrown away.

If you have any questions regarding any part of this assessment report, please feel free to call Kevin Kennedy, Environmental Health Specialist, for Children's Mercy Hospital at 816-234-3097 and he will be happy to assist you.

Issue: No exhaust ventilation above the stove



Action(s): 1. Open windows, operate fans, etc. while performing any kitchen activities  
2. Install ductwork and exhaust fan above stove to exhaust kitchen odors, moisture, and other contaminants to the outside

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As described below, you may be having on the things you can do to improve the overall health

Notes of Issues



# Any Home Issues Reported Supported with Photos

EHA ID #: 000 Date of Site Visit: Saturday, January 03, 1900

## 1.0 - Environmental Health Issues and Action Summary

The following issues were identified during the Environmental Health Assessment of your home. The issues described below are followed by some specific actions that are recommended to eliminate or minimize the impact an issue may be having on the indoor environmental health of your home. This action plan is intended to provide you with some specific things you can do to that, when completed, should improve the general health of your home's indoor environment and may improve the overall health of your family.

### Mechanical Issues and Recommended Actions to take

#### Photos of Issues

**Issue:** Dirty fiber glass filter in use and visible dust observed on/around the heating ventilation and air conditioning (HVAC) system

**Action(s):**

- 1) Replace flat fiberglass furnace filters with a pleated furnace filter. Replace pleated furnace filter with a Maximum Efficiency Rating Value (MERV) rating of at least an 8. Pleated furnace filters should be replaced every three (3) months or per manufacturer's recommendations. This will help provide clean air within the home and also help filter out smaller particles, which can contribute to respiratory infections.
- 2) Safely clean areas on and around furnace by "damp dusting" or with a High Efficiency Particulate Air Filtered Vacuum (HEPA) to decrease the chances of pulling any unwanted dust or dirt into the system and distributing it throughout the home.



**Issue:** Incorrect angle of exhaust vent, corrosion/rust on burner cover and active water leak observed from drain valve on the hot water heater located in the basement area of the resident.

**Action(s):** To prevent safety hazards, a licensed professional should assess the hot water heater and make necessary repairs to assure that it is functioning properly, the pilot light/burner panel cover is properly secured, gasses are exhausting properly through the vent and drain valve is not leaking.



**Issue:** Lint observed on basement wall and floor, dryer currently exhausts inside the basement area of the resident.

**Action(s):**

- 1) It is recommended to have a licensed HVAC expert install a safe and efficient dryer vent so that the dryer safely exhausts outside the home in order to reduce fire hazard from lint build up; condensation and possible mold growth.
- 2) It is also recommended to clean lint from dryer and dryer vent to prevent potential fire hazard and to reduce build up and increase ventilation.

EHA ID #: 000 Date of Site Visit: Saturday, January 03, 1900

## 1.0 - Environmental Health Issues and Action Summary

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### Mechanical Issues and Recommended Actions to take

#### Photos of Issues

**Issue:** Currently there is no exhaust fan present in the bathroom and the window is sealed with plastic.

**Action(s):**

- 1) Family should consider installing an exhaust fan in the bathroom to help pull out all excess moisture after showering and bathing to prevent mold and bacteria growth.
- 2) Operate exhaust fan during, and at least 15-20 minutes after, taking shower/bath to help decrease the humidity level.
- 3) Wipe down the ceramic tile in the tub area after each shower and bath to help decrease the humidity level and moisture.
- 3) If installing a bath fan is not possible, then the window or door to the bathroom should be left open as much as possible to promote air movement and circulation.



**Issue:** Electric stove in kitchen has no exhaust hood.

**Action(s):**

- 1) Install an exhaust hood either on the outside wall or above the stove to help remove cooking odors, particles, and moisture out of the home, which can be an issue for sensitive individuals.
- 2) If you decide not to install an exhaust fan, open windows and operate fans during cooking activities to help provide fresh air to circulate into the space.

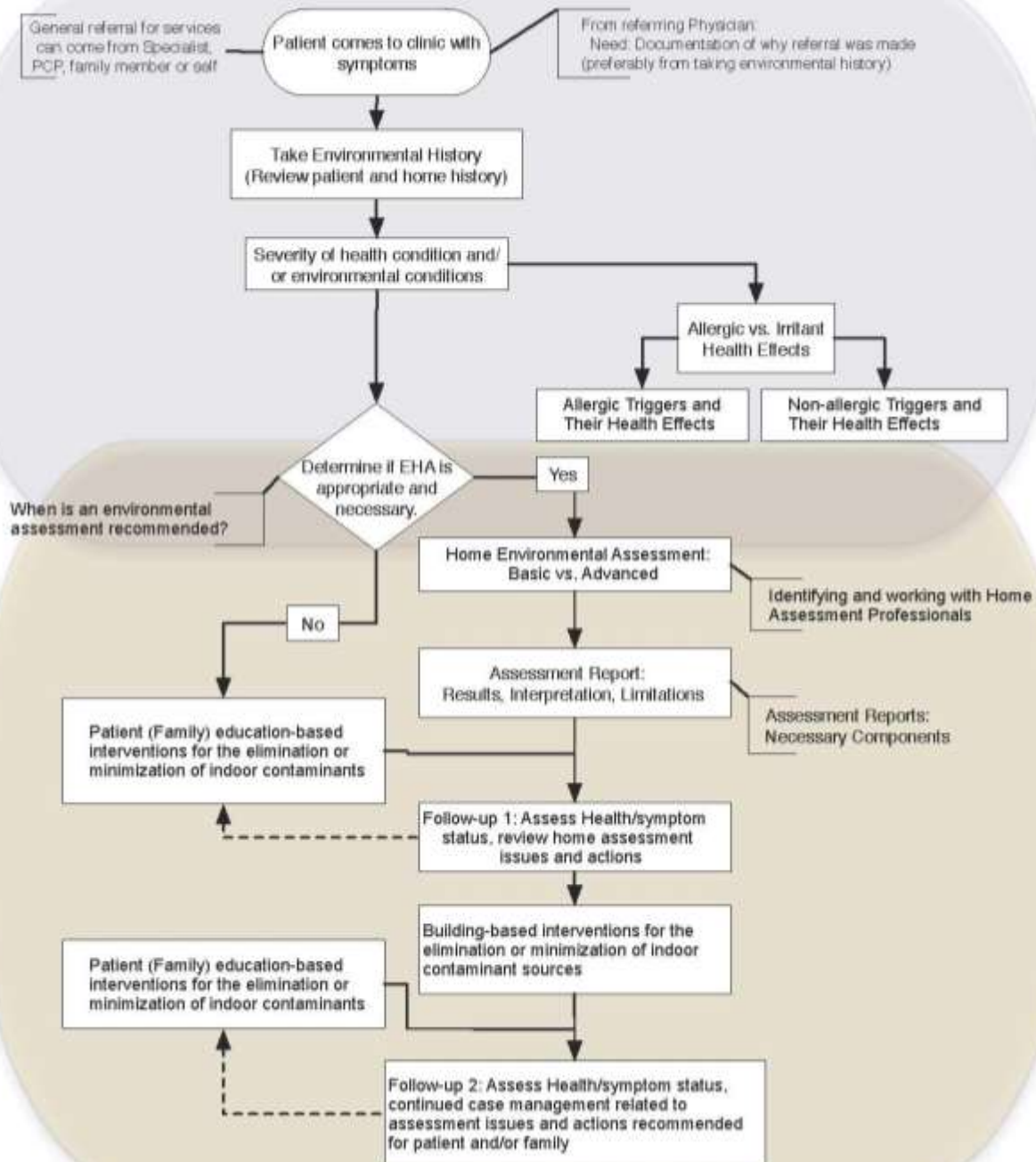


**Issue:** Missing front lower electrical cover on refrigerator, dishwasher and main electrical box in the basement.

**Action(s):** Its recommended to have certified electrician or professional install covers to prevent electrical shock hazard.



# Home Environmental Health Assessment Algorithm



# Case Conclusion

What Happened?

