

# MODULE 2

## STEP 1: START WITH THE RESIDENT



Healthy Housing Solutions<sup>INC.</sup>

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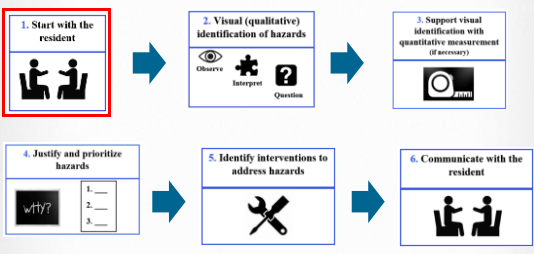
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### KEY STEPS



1. Start with the resident

2. Visual (qualitative) identification of hazards

3. Support visual identification with quantitative measurement (if necessary)

4. Justify and prioritize hazards

5. Identify interventions to address hazards

6. Communicate with the resident

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### 1. START WITH THE RESIDENT

**1. Start with the resident**



- Sample interview tools
- Communicating with the resident
- Impacts of health hazards on the resident.
- Case study (part 1)

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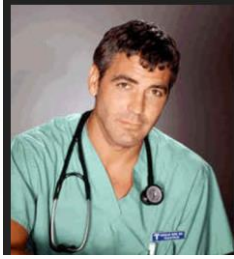
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### 1. START WITH THE RESIDENT



Not a doctor . . . .



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### 1. START WITH THE RESIDENT



“If you get rid of the dust mites in your home, your daughter’s asthma symptoms will decrease.”



“There is evidence from the EPA that dust mites are an asthma trigger. I will explain some ways you can decrease dust mites in your house. Make sure you consult a doctor about whether your daughter’s asthma is related to dust mites.”

*Which one should you use?*



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### 1. START WITH THE RESIDENT

Health impacts of housing hazards in eight categories:

- 1. Moisture
- 2. Sanitation
- 3. Pests
- 4. Ventilation
- 5. Safety
- 6. Contaminants
- 7. Maintenance
- 8. Comfort

- 1. Dry
- 2. Clean
- 3. Pest-Free
- 4. Ventilated
- 5. Safe
- 6. Contaminant-Free
- 7. Maintained
- 8. Climate Controlled



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**BEFORE WE GET INTO THE PRINCIPLES . . .**

**Acute vs. chronic**

**Vulnerable age groups**

**Asthma basics**

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**ACUTE VS. CHRONIC**

**Acute:** hazards that require immediate attention because they are an immediate threat to health or life.

**Chronic** – hazards which do not pose an immediate risk to health or life but do promote allergies, asthma, lead poisoning, pesticide exposure, or other chronic health conditions.

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**VULNERABLE AGE GROUPS – SAFETY EXAMPLE**

Age Group	Susceptibility
Infants	Choking/suffocation is the highest rate of injury death
Birth – age 14	Nonfatal falls at home
1-14 years old	Highest rate of home injury death is fires and burns
Older adults	Nonfatal falls at home
Adults 80+ years	20 times higher risk for death from injury than younger individuals

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### IDENTIFYING VULNERABLE AGE GROUPS

As a starting point – see the Healthy Homes Rating System Operating Guidance at:

[https://portal.hud.gov/hudportal/documents/huddoc?id=operatingguidanceHHS\\_1-14.pdf](https://portal.hud.gov/hudportal/documents/huddoc?id=operatingguidanceHHS_1-14.pdf)

**Example on page 38, HHRS Operating Guidance**

**1 Damp and mould growth**


**Description of the hazard**

1.01 This category covers threats to health associated with increased prevalence of home dust mites and mould or fungal growth resulting from dampness and/or high humidity. It includes threats to mental health and social well-being which may be caused by living with the presence of damp, damp staining and/or mould growth.

**Potential for harm**

**Most vulnerable age group and statistical averages**

1.02 The most vulnerable age group is all persons aged 14 years or under.



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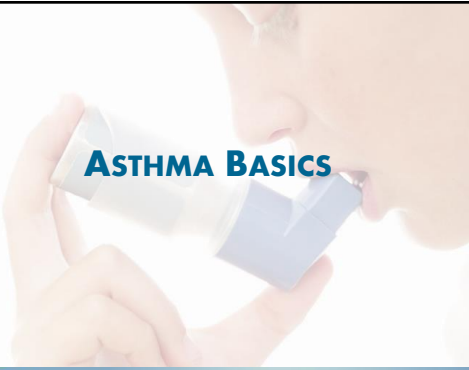
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### ASTHMA BASICS



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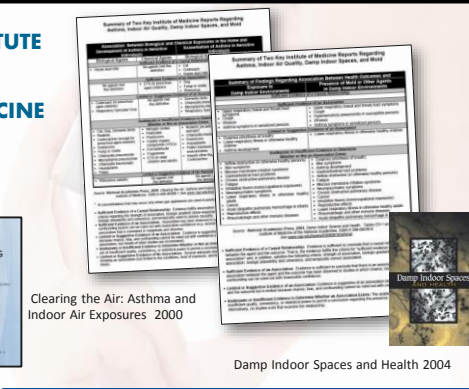
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### INSTITUTE OF MEDICINE



**Clearing the Air: Asthma and Indoor Air Exposures 2000**

**Damp Indoor Spaces and Health 2004**



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### ASTHMA SYMPTOMS VS. DEVELOPMENT OF ASTHMA

- Asthma symptoms means an attack has been triggered and the individual is coughing, wheezing, or having shortness of breath.
- Developing asthma means a doctor has diagnosed an individual as having asthma.




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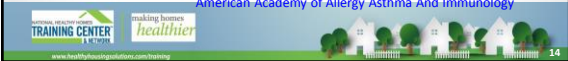
### TYPES OF ASTHMA

An important note about asthma:

- 60% of people with asthma have allergic asthma
- Triggers for those with allergic asthma include:
  - Cockroaches
  - Dust mites
  - Molds
  - Pet dander
  - Pollen
  - Secondhand smoke



American Academy of Allergy Asthma And Immunology




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### HEALTH IMPACTS OF HAZARDS

By principle:

1. Dry
2. Clean
3. Pest-Free
4. Ventilated
5. Safe
6. Contaminant-Free
7. Maintained
8. Climate Controlled




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**HEALTH IMPACTS:**

**moisture and microbial conditions such as mold** impact the lungs through:



**Keep it Dry**

1. Asthma
2. Infections
  - Bronchitis
  - Fungal infections
3. Allergies



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**HEALTH IMPACTS: asthma/allergy triggers**

Strong evidence that chronic exposure to indoor dampness and microbial agents (e.g. mold) is associated with the development of asthma in sensitized individuals.



**More on Mold**

**Keep it Dry**



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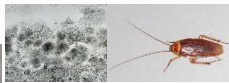
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**SANITATION – CLEANING REDUCES EXPOSURE TO:**

Particulates from cooking, fireplaces, and cigarette smoking



Asthma and allergy triggers such as mold and pests



Pesticides



Dust



**Keep it Clean**



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
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**HEALTH IMPACT:**


**Environmental Tobacco Smoke (ETS):**




Sudden Infant Death Syndrome (SIDS)



Coronary heart disease





Ear problems



- Acute respiratory infections,
- More severe asthma,
- Lung cancer,
- Chronic Obstructive Pulmonary Disease,
- Pneumonia, and
- Bronchitis

Second hand and Third hand smoke

**Keep it Clean**

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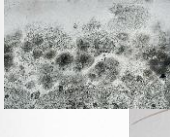


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**HEALTH IMPACTS: asthma/allergy triggers**

- Respiratory disease
- Allergy / Asthma trigger
- Asthma symptoms
- Development of asthma

**Keep it Clean**

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**HEALTH IMPACTS: pesticide poisoning**




Headache



Nausea or loss of appetite



Moodiness, restlessness, mental confusion



Skin, eye, nose and throat irritation



Difficulty breathing

Severe poisoning can include vomiting, uncontrollable muscle twitches, convulsions inability to breathe and unconsciousness.

**Keep it Clean**




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### ACUTE VS. CHRONIC pesticide poisoning

**Acute** – occurs after exposure to a single dose of pesticide

**Chronic** – occurs from repeated, small, non-lethal doses over a long period of time.

**Keep it Clean**



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### HEALTH IMPACTS: Lead Exposure



- Reduced IQ,
  - Reduced attention span,
  - Increased antisocial behavior and
  - Reduced educational attainment
- 
- Damaged hearing and speech
- 
- Slowed growth
  - Anemia (too few red blood cells)
  - Feels tired or weak
  - Shortness of breath,
  - Dizziness or headaches

**Keep it Maintained**



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### HEALTH IMPACTS: Pests

#### Asthma Triggers AND Allergy Triggers



**Dust mites**  
Asthma trigger  
Allergy trigger



**Cockroaches**  
AND carry bacteria, viruses.



**Mice (and rats)**  
AND carry bacteria, viruses, salmonella and hantavirus



**Bedbugs**  
Disturb sleep and mental health

**Keep it Pest-free**



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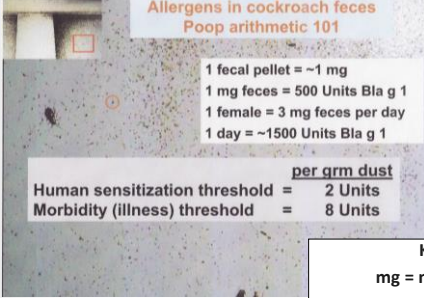
### HEALTH IMPACTS: Pests

Allergens in cockroach feces  
Poop arithmetic 101

1 fecal pellet = ~1 mg  
1 mg feces = 500 Units Bla g 1  
1 female = 3 mg feces per day  
1 day = ~1500 Units Bla g 1

per arm dust  
Human sensitization threshold = 2 Units  
Morbidity (illness) threshold = 8 Units

KEY  
mg = milligram  
BLa g 1 = cockroach allergen



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### Health impacts: VENTILATION problems:

- Various pollutants can be found in concentrations 2-5 times higher indoors than outdoors.

**Keep it Ventilated**



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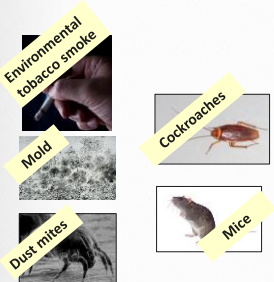
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### Pollutants covered under previous "Keep it" Principles:

Do you remember the health impacts from these hazards?

Environmental tobacco smoke  
Mold  
Dust mites  
Cockroaches  
Mice

**Keep it Ventilated**



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**Other pollutants that can be concentrated indoors without proper ventilation:**

**Volatile Organic Compounds (VOCs)**

Chemical compounds that evaporate when exposed to the air.



- Eye, nose and throat irritation
- Headaches
- Loss of coordination
- Damage to liver, kidneys and central nervous system
- Risk of cancer

**Keep it Ventilated**

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**GIZMODO** <http://gizmodo.com/5896801/what-exactly-is-that-new-car-smell>

**What Exactly Is That New Car Smell?**

Rachel Swaby  
3/27/12 4:40pm Filed to GIZ EXPLAINS

*The smell of a new car is intoxicating. It reminds us of money and shiny objects. It evokes that golden period before repeat coffee stains, moldy Tupperware, and our trunk's transformation into a Good Will depository change the way we feel about our car. But it's kind of a weird smell, right? It's so different from chocolate chip cookies or eucalyptus or whatever else we identify as pleasant.*

*Unfortunately, . . . The smell is mostly organic compounds in the vehicle off-gassing. Anything that is vinyl or plastic—the foam lamination on the seat surface, the plastic on the dash or on the door panel—it's the VOCs coming out of them that causes that smell. VOCs . . . can do a number on your health. And they're everywhere. Thousands of household products—from paints to cleaning products to waxes—all emit the gasses . . .*

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**Other pollutants that can be concentrated indoors without proper ventilation:**

**Particulate Matter** **Keep it Ventilated**

**What is it?** A mixture of solid particles and liquid droplets found in the air.

**Sources?** Dust, dirt, soot, and smoke sources, chemical reactions from industry

**Health impacts?** Exacerbate heart and lung disease, aggravate asthma, decrease lung function, increase respiratory symptoms

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### Health impacts: Safety problems include a variety of injuries, including:

-  Choking and suffocation
-  Fires and burns
-  Drowning
-  Firearms related injuries
-  Electrical shock
-  Poisoning
-  Entry by intruders
-  Trips and falls

**Keep it Safe**




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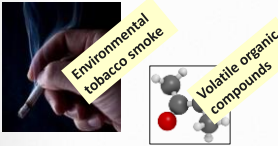
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### Health impacts: CONTAMINANT problems:

Four specific contaminants to focus on. Two have been reviewed already.



Do you remember the health impacts from these hazards?

**Keep it Contaminant-free**




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### Health impacts from CONTAMINANT problems -- **Asbestos**:

<b>Asbestos</b> 	<b>What is it?</b> Naturally occurring fibrous mineral	<b>Sources?</b> Roofing shingles, 9 inch floor tiles, insulation	<b>Health impacts?</b> Lung cancer, mesothelioma, asbestosis
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**Keep it Contaminant-free**




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**Health impacts: Contaminant -- Asbestos:**

**Mesothelioma:** (*mess-o-theel-e-oma*)  
A cancer of the lining of the chest and the abdominal cavity

**Asbestosis:** (*as-be-stoh-sis*)  
Lungs become scarred with fibrous tissue, leading to shortness of breath and persistent cough

**Keep it Contaminant-free**

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**Health impacts: Contaminant -- Radon:**

**What is it?**  
Naturally occurring radioactive gas that comes from the breakdown of uranium in soil, rock and water and gets into the air you breathe.

**Sources?**  
Radon comes from the soil. It can also enter the home through well water.

**Health impacts?**  
Lung cancer  
**Number 2 cause of lung cancer after smoking tobacco**

**Keep it Contaminant-free**

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**Highest Potential**  
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**Moderate Potential**  
States 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

**Low Potential**  
States 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

**Keep it Contaminant-free**

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### Health impacts: Maintenance problem -- **lead-based paint**

Do you remember the health impacts?



- Reduced IQ,
- Reduced attention span,
- Increased antisocial behavior and
- Reduced educational attainment
- Damaged hearing and speech
- Slowed growth
- Anemia (too few red blood cells)
- Feels tired or weak
- Shortness of breath,
- Dizziness or headaches

**Keep it Maintained**

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### Health impacts: Lead-based paint on **adults:**




**Muscle and joint pain**



**High blood pressure**



**Fertility and sexual problems**



**Memory and concentration problems**

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### Resources



**Healthy Home Key Messages (handout)**

**LEAD**

**MOULD**

**ASBESTOS**

**Radon**

**Water Quality**

**Indoor Air Quality**

**Energy Efficiency**

**Lead & Mold**

**Asbestos**

**Radon**

**Water Quality**

**Indoor Air Quality**

**Energy Efficiency**

**Common Household Contaminants: The Hazards and the Laws**

Contaminant	Health Hazards	Common Sources	Control Measures	Applicable Laws
Asbestos	Lung cancer, mesothelioma, asbestosis	Older buildings, vermiculite, vermiculite-contaminated vermiculite	Prohibit asbestos-containing materials from being used in new construction	Asbestos Hazard Emergency Response Act (AHERA), Asbestos Ban and Phase-out Rule
Lead	Reduced IQ, reduced attention span, increased antisocial behavior, reduced educational attainment, damaged hearing and speech, slowed growth, anemia, feels tired or weak, shortness of breath, dizziness or headaches	Older paint, lead-based solder, lead-based pigments, lead-based pigments in toys, lead-based pigments in jewelry, lead-based pigments in cosmetics, lead-based pigments in folk art	Prohibit lead-based paint in new construction	Lead-based Paint Poison Prevention Act (PLPPIA), Lead-based Paint Prohibition Act
Radon	Lung cancer	Radon gas from the ground, radon gas from water	Test for radon, mitigate radon levels	Radon Reduction Act
Water Quality	Various health effects depending on contaminant	Lead, copper, iron, manganese, nitrate, nitrite, fluoride, disinfection byproducts, herbicides, pesticides, pharmaceuticals	Test for water quality, install water filters	Safe Drinking Water Act (SDWA)
Indoor Air Quality	Respiratory issues, allergies, asthma	Mold, dust, pollen, pet dander, carbon monoxide, radon	Test for indoor air quality, improve ventilation, use air purifiers	None
Energy Efficiency	None	None	Seal air leaks, improve insulation, use energy-efficient appliances	Energy Policy Act of 2005

Separate sheet in your binder And in the Essentials Manual

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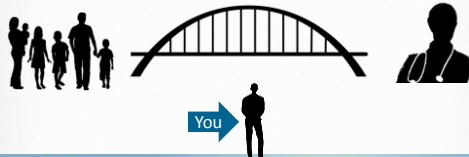
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**NOW THAT YOU KNOW ALL THIS HEALTH IMPACTS INFORMATION . . .**

*Remember that you can be a bridge between your client and a health professional BUT you are NOT a health professional yourself.*



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**REVIEW OF HEALTH IMPACTS**

**Get ready to compete!**

1. Close your binders.
2. Your instructor will divide the class into two teams.
3. Your instructor will show a question on the screen and ask Team A to answer it.
  - Team A must agree on the answer(s) to the question.
  - If Team A gets the question right, they get one point.
  - If they get the question wrong, Team B gets a chance to answer the question (and get the point)
4. Your instructor will alternate questions between Team A and Team B.
5. The Team with the most points at the end of the game, wins!

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**QUICK REVIEW ON RESIDENT INTERVIEWING**



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### SAMPLE INTERVIEW TOOLS

Pediatric Environmental Home Assessment (PEHA)



Interview tools from local / state governments

ASTM D7297 – Evaluating Residential IAQ Concerns

Lawrence Berkley Laboratories questionnaire (in development)

NEEF Environmental Health Survey

Healthy Homes Inspection Manual (Section 1)


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### PRACTICE INTERVIEW

- Break into groups of 3
- Find the PEHA Resident Information form
- Interview your partner (5 minutes)
  - Third person is an observer
- Use your own home as a reference to answer questions


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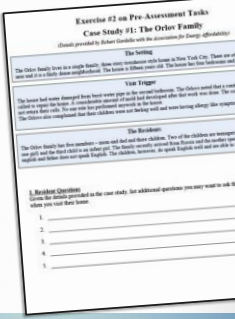


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### THE ORLOV FAMILY CASE STUDY (PART 1)

- Same groups
- Take out Orlov Case Study
- Read the case study
- Write out questions for the residents.
- Report out to full class


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