



Activity Overview

Participants read about four children who spend time at or near a contaminated place. Then they guess which child has the longest exposure, and verify with a calculator.

When to Use It

When reviewing or preparing input on a risk assessment. Community members need to think about how long they are typically exposed to contamination.

Suggested companion activities:

- See Pieces of the Risk Puzzle for other activities that fit your situation

Steps

- 1. Launch the activity:** A risk assessor needs to know all the ways people could come into contact with contamination. They pay special attention to children (called “sensitive receptors”). Community members play an important role by calling attention to how much time children spend near a contaminated site. Information about just one person’s exposure can change the way a site is handled.
- 2. In pairs or as a group:** Read the stories. First, make a guess from the description about which children spend the most time exposed to contamination. Then, work it out mathematically.
- 3. Debrief:**
 - How did your guess compare to what you actually calculated?
 - (If applicable) How does this relate to our own situation? Does anyone in the community have longer exposures than typical?

Worth Noting

Participants often confuse “every day” (7 per week) and “on weekdays” (5 per week). Be ready to help with this.

If community members do not have exact figures for exposure time, they can estimate “no more than ...” or “not less than ...”

EPA usually talks about risk in terms of “Average Daily Exposure.” To calculate this for this activity, divide the “hours per year” answers on the right by 365 days per year, to get an answer in hours per day.

Length of time is just one factor professionals use in assessing risk. See the resource Pieces of the Risk Puzzle for other risk factors.

Smart Moves

- Seek verification
- Talk it out

Skill: Use community-based knowledge to inform a risk assessment

Time: 20-30 minutes

Preparation

Choose which of the four examples you would like your group to work on:

- Orchard (Soil)
- Community Garden (Soil)
- Park by The Paint Factory (Air). Also in Spanish.
- Pond (Water/swimming). Also in Spanish.

Materials

- Participant instructions (1 per pair)
- Pieces of the Risk Puzzle (1 per participant)
- Calculators
- Scrap paper, pens or pencils

Ellen’s total exposure is 2 hours
times 7 days per week
times 12 weeks
then divide by 2 to get half the days

Answers (in hours per year)

Orchard		Park / Parque	
Rodrigo	39	Rodrigo	52
Sofia	30	Sofia	30
Ellen	84	Ellen	84
David	87	David	87

Garden		Pond / Estanque	
Rodrigo	24	Rodrigo	24
Sofia	27	Sofia	27
Ellen	84	Ellen	84
David	35	David	54

The Orchard (Soil)



Parent

Arsenic is very dangerous. We're worried about the arsenic levels on the orchard property.



Rodrigo

My buddies and I go there all the time.

What would you say is the highest number of hours per year that children spend in the orchard?



Risk Assessor

Which child spent the most time in the orchard? Make a guess first. Then calculate it. Is your final answer the same as your first guess?

<p>Rodrigo</p> <p>Played in the orchard for 6 hours every day on his 6-day spring break. Also came to the orchard to pick apples for about a half hour, about 5 times in October.</p>	<p>Sofia</p> <p>Walked through the orchard every day going to and from school. It took her about 5 minutes to cross the orchard going one way. There are 180 school days per year.</p>
<p>Ellen</p> <p>Sat beneath her favorite tree in the orchard for about 2 hours a day on warm days in the summer, which was about half of the days during her 12-week vacation.</p>	<p>David</p> <p>Went jogging around the orchard for about a half hour each weekday morning, about 8 months per year.</p>

The Community Garden (Soil)



Parent

They found small amounts of lead in the soil in our local community garden! Many of us take children with us when we garden. Are they at risk?



Sofia

I like to play with the hose and the mud at the garden!

What would you say is the highest number of hours per year that children spend in that garden?



Risk Assessor

Which child spent the most time in the garden? Make a guess first. Then calculate it. Is your final answer the same as your first guess?

<p>Rodrigo</p> <p>Visited his relatives for 6 days and played in the garden each day for four hours, digging tunnels and roads for his toy trucks.</p>	<p>Sofia</p> <p>Watered and weeded with her dad for an hour every Monday, Wednesday, and Friday, for 9 weeks in the summer.</p>
<p>Elena</p> <p>Was everyone's favorite helper, digging holes and planting seeds by hand with her mom. Elena was there when the weather was nice, about half the days during her 12-week summer vacation. She spent about 2 hours a day there.</p>	<p>David</p> <p>Waited in the garden for his mom after school for about a half hour each weekday afternoon, for 8 weeks in the spring and 6 weeks in the fall. While waiting, he usually sifted through the dirt looking for 'buried treasure.'</p>

The Park by the Paint Factory (Air)



Parent

The paint factory is very close to the park our children play in. There are Volatile Organic Compounds (VOCs) in the air in that area.



Rodrigo

My buddies and I play ball in that park all the time.

What would you say is the highest number of hours per year that children spend in that park?



Risk Assessor

Which child spent the most time in the park? Make a guess first. Then calculate it. Is your final answer the same as your first guess?

<p>Rodrigo</p> <p>Played in the park for 6 hours every day on his 6-day spring break. Also went there for eight 2-hour baseball games over the summer.</p>	<p>Sofia</p> <p>Walked through the park every day going to and from school. It took her 5 minutes to cross the park going one way. There are 180 school days per year.</p>
<p>Ellen</p> <p>Sat beneath her favorite tree in the park for about 2 hours a day on warm days in the summer, which was about half of the days during her 12-week vacation.</p>	<p>David</p> <p>Went jogging around the park for about a half hour each weekday morning, about 8 months per year.</p>

The Pond (Water)



Parent

They found arsenic in the pond near our house! So many neighborhood children swim there. Are they at risk?



Rodrigo

My buddies and I swim in that pond all the time.

What would you say is the highest number of hours per year that children spend in that pond?



Risk Assessor

Which child spent the most time in the pond? Make a guess first. Then calculate it. Is your final answer the same as your first guess?

<p>Rodrigo</p> <p>Swam in the pond for 4 hours every day on his 6-day visit with his relatives.</p>	<p>Sofia</p> <p>Took one-hour swimming lessons every Monday, Wednesday, and Friday for 9 weeks in the summer.</p>
<p>Ellen</p> <p>Ellen liked to swim in the pond a lot, but only when it was hot. That was about half the time during her 12-week summer vacation. On hot days, she spent about 2 hours a day swimming.</p>	<p>David</p> <p>Swam laps in the pond for about a half hour each weekday morning, about 5 months per year.</p>