Lesson #18: Toxic Firefighting

Stage 1 – Desired Results

Established Goals: How do scientific and **technological** developments, past and present, impact **individuals**, societies and the environment (**locally**/globally)?

Understandings:	Essential Questions: **SLO B1:** How do scientific and technological developments, past and present, impact individuals, societies and the environment (locally/globally)?
Students will understand that… 1. There are negative effects of the resulting WASTE when hydrocarbon compounds are used to make goods.	
Students will know…1. That burning some plastics produces dioxins. 2.Health concerns of PVC (polyvinyl chloride) 3. The importance of scientific evidence to help in decision-making	Students will be able to…1. Analyze an issue-based article 2. Identify and demonstrate actions that promote a sustainable environment.

Stage 2- Assessment Evidence

Knowledge: 1. Assess knowledge of PVC as a polymer – its monomer, why it is a health/environment/security concern.	Skills: 1. Assess the completion of the issue-based article analysis 2. Assess the alternatives described by students.

Materials Required

HANDOUTS:

1. "Cancer Takes Firefighter Early", Winnipeg Free Press, Saturday, October 7, 2006
2. Issue-Based Article Analysis Frame **(Source: Manitoba Education and Training. (1997). Senior Years Science Teacher Handbook. Manitoba: Manitoba. (p. 11.30, 11.40))**
3. Code Green (Source: Healthy Building News. Code Green: PVC Elimination May Be the Most Significant Contribution you can make to homeland security. Retrieved August 30, 2007 from http://www.healthybuilding.net/news/code_green-040504.html)
4. Defending Your Point of View and Personal Response

Access to web (**Source:** Healthy Building Network. Retrieved August 30, 2007 from http://www.healthybuilding.net/pvc/index.html)

PVC pipe and our environment (**Source:** Canadian Plastics Industry (newsroom) Retrieved August 30, 2007 at http://www.cpia.ca/newsroom/details.php?ID=468)

Stage 3 – Learning Plan

1. Have students read article "Cancer Takes Firefighter Early" **(Source: Sanders, C. (2006). Cancer Takes Firefighter Early. Winnipeg: Winnipeg Free Press)**
2. Direct students to complete Issue-Based Article Analysis
3. DISCUSS: How is this a societal health issue, AND an economic issue AND an environmental issue all at the same time? Students can offer to read their individual responses from "Your questions" from the Issue-Based Article Analysis and record them in student questions in the chart below as a question about human health/well-being, OR environment (economic factors here are included within human health and well-being).
4. Using Robert's 4 guiding ideas for sustainability, propose a solution to the problem. PVC (polyvinyl chloride) plastic is the source of much dioxin.

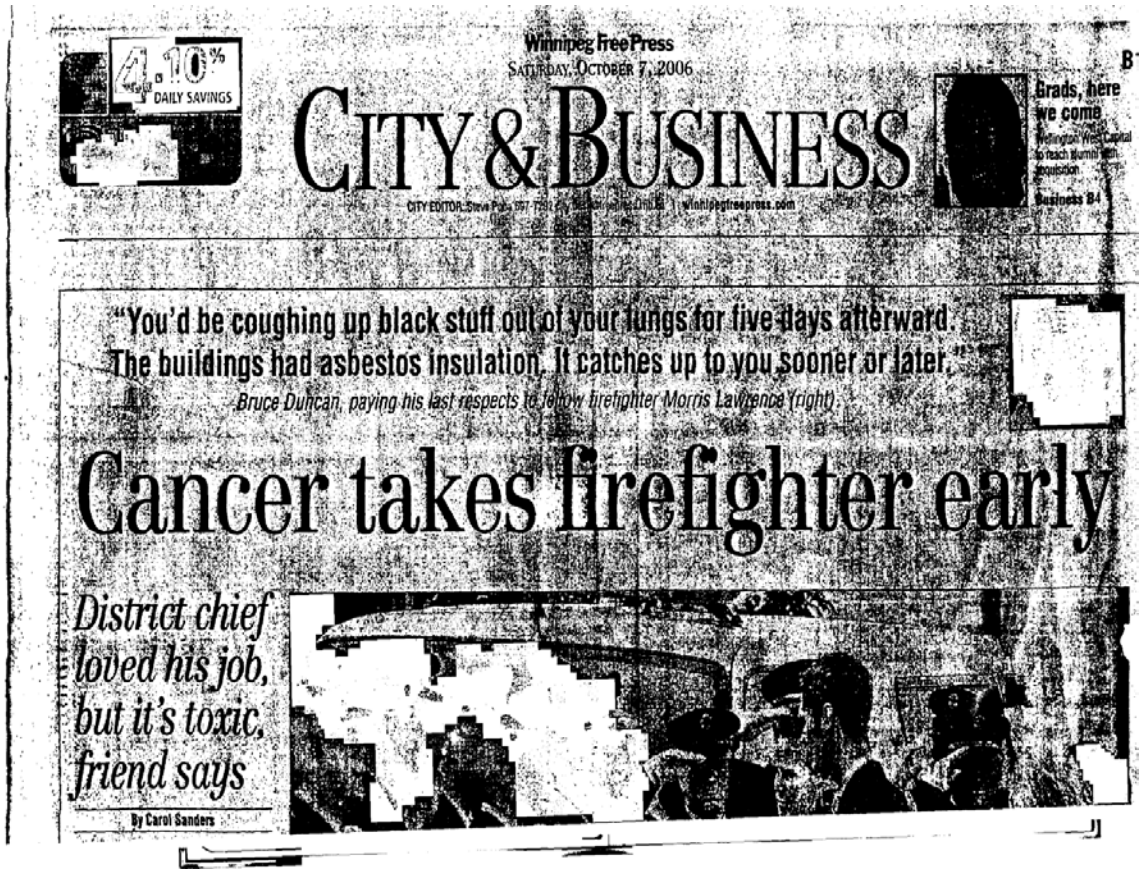
   Investigate "PVC Facts" and "PVC-Free Alternatives" from the website http://www.healthybuilding.net/pvc/index.html

   Note that this links to PROJECTS that include a product that contains PVC (a main component of electrical wiring in computers and in many building materials). Check out the price of the PVC-free materials compared to other brands! (This will be a factor in the projects as well)
5. Allow time for students to explore the other websites and discuss opposing views.

Highlight the importance for scientific evidence that is presented in an unbiased way and the fact that we might not be able to research new compounds quickly enough to keep up. Relate to precautionary principle discussed in the earlier lesson. Be attentive to level of anxiety in students as this can be too "doom-and-gloom" for some. Remind them that there are many positive stories as well. 6. HANDOUT: Defending Your Point of View and Personal Response 6. **Slide 42** – There are solutions 7. **Slide 43**- DIRECT students to their WASTE report
Extension Learning Activities

Article: Cancer Takes Firefighter Early

Source: Sanders, C. (2006).Cancer Takes Firefighter Early. Winnipeg: Winnipeg Free Press.



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CITY & BUSINESS

Grads, here we come

"You'd be coughing up black stuff out of your lungs for five days afterward. The buildings had asbestos insulation. It catches up to you sooner or later."

Bruce Duncan, paying his last respects to fellow firefighter Morris Lawrence (right).

Cancer takes firefighter early

District chief loved his job, but it's toxic, friend says

By Carol Sanders

Article: Cancer Takes Firefighter Early

Source: Sanders, C. (2006).Cancer Takes Firefighter Early. Winnipeg: Winnipeg Free Press.

Firefighters from as far away as Alberta offer condolences to District Chief Morris Lawrence's family at his funeral yesterday. Lawrence was only 59.

Winnipeg Fire Paramedic Service District Chief Moe Lawrence was planning to retire this fall, but instead of fishing and spending time with his wife and family, he was buried in a Winnipeg cemetery yesterday.

Lawrence was 59.

"We thought he was the picture of health," said Bruce Duncan, 55, a fellow firefighter and friend for more than 30 years.

He and Lawrence were fishing buddies, but lately it seemed they were funeral friends, attending services for fellow firefighters. Then, three months ago, Lawrence learned he had terminal cancer.

"In late July, he was going to the lake with his family and he felt a weakness in his left side and his mouth sagged a bit," Duncan said. Lawrence went to the hospital instead of the lake and doctors found a brain tumour, followed by a baseball-size tumour in his lung, and then more cancer "right through him," Duncan said.

"Some of us are lucky to be around," he said before paying his respects to the friend he fought many fires with over the last three decades.

"You'd be coughing up black stuff out of your lungs for five days afterward. The buildings had asbestos insulation. It catches up to you sooner or later."

Duncan said Lawrence's last active fire was one of Winnipeg's saddest.

"Moe was at the curling club fire." On June 10, Winnipeg lost its beloved 85-year-old Thistle Curling Club to arson. Lawrence was one of the main incident commanders at the blaze, which caused $2 million damage to the West End club and nearby homes, Duncan said. Not long after, Lawrence was talking about retiring after 34 years of fighting fires.

"He was looking at his pension the week before he was diagnosed," Duncan said. "He was looking at retiring right around now."

Yesterday, more than 300 firefighters from Winnipeg and as far away as Alberta attended Lawrence's funeral at Westwood Community Church. Being there was a show of solidarity and a mortality check for firefighters nearing the end of their careers.

"It's been a real shakeup for a whole lot of people," Duncan said.

It's unsettling to see Lawrence and so many fellow firefighters their age getting sick or dying, but Duncan said he couldn't see himself or Lawrence in any other profession.

"I guess that's why Moe and I were such close friends. We both have a passion for the job. It's not your nine-to-five job — there's a lot of action and adrenaline. But the biggest thing we're doing this service for is the community. That's who we are."

Manitoba passed legislation in 2001 that allowed firefighters to claim workers' compensation for specific types of cancer if they had served 15 years in the fire department. The benefits help non-smoking firefighters who contract colorectal, ureter or lung cancer, or firefighters who suffer a heart attack within 24 hours of attending an emergency.

Their protective gear today is five times better than in the old days, but the toxicity of fires is 100 times worse with the increased use of plastics, said Alex Forrest, United Fire Fighters of Winnipeg president. Since 2001, 60 claims have been filed by firefighters, and about half have been adjudicated or dealt with. Most don't live to enjoy their benefits.

"I've been to a dozen funerals that involve line-of-duty deaths," Forrest said.

Yesterday, Lawrence was buried with full firefighter honours, leaving behind his wife, children, grandchildren, his mother, friends and fellow firefighters.

Duncan has stepped into Lawrence's job at No. 10 fire station on Border Place, but says no one can fill his friend's shoes.

"Moe was a special guy. He loved his family. He never had a bad word about anybody... He was a professional at everything he did. He treated everyone with dignity and respect. People liked to confide in him. They knew they could trust Moe."

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Combustion of Hydrocarbons

Issue: Burning Hydrocarbon-Based Compounds	
Environment	Human Health and Well-Being

1. Which of the 4 guiding ideas does this issue violate?
2. Using the website http://www.healthybuilding.net/pvc/index.html which is a website dedicated to promoting healthier buildings, read "PVC Facts" and add to the chart above. website http://www.healthybuilding.net/pvc/index.html
3. Propose a solution to this issue. This will include choosing an actual building "target item" that contains PVC and choosing an alternative that could be used. Investigate "PVC-Free Alternatives" from the same website
4. Search http://www.healthybuilding.net/pvc/news.html and link to some cities that are taking action on PVC (There are several links here to pthalates in personal care products and medical supplies). http://www.healthybuilding.net/newsletter/August2002final.pdf
5. Read the article "Code Green" (**Source:** Healthy Building Network. Retrieved August 30, 2007 from http://www.healthybuilding.net/news/code_green- 040504.html). Add to your chart above.
6. There are other views on the use of PVC. Read "PVC pipe and our environment" (**Source:** Canadian Plastics Industry (newsroom) Retrieved August 30, 2007 at http://www.cpia.ca/newsroom/details.php?ID=468). Add to your chart above.

Defending Your Point of View

In a fire, the substances that products are made of are often released directly into the air. Suppose a piece of legislation was passed that required that you submit a list of items in your house so that firefighters could know how "toxic" your house was if it was burning. Choose the statement that you agree with MOST and defend your choice:

Firefighter's point of view: I should have the right to refuse to enter a building/be near a fire if I think there is a reason that the fire is toxic to breathe in.

Others point of view: There is risk associated with every job and firefighters know those risks when they enter the job.

Personal Response

Assuming that you would want your house to be as low in toxicity as possible so that fire crews would agree to fight your fire, consider the following questions:

a) How would you decide what was toxic?
b) What would you keep?
c) What would you "throw out"?
d) Where would you "throw" it?
e) What would happen to it once you "threw it out"?