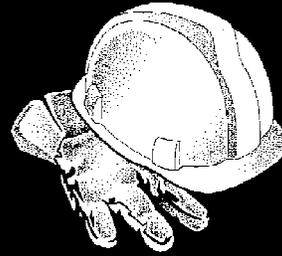


TRAINING GUIDE

ASPHALT



1994

Before you begin the meeting...

- Does this topic relate to the work the crew is doing? If not, choose another topic.*
- Has the crew completed basic Hazard Communication training? It will help them understand this topic.*
- Did you read this Training Guide and fill in the blanks where the  appears? (To find the information you need, look over the Safety Walkaround Checklist for this topic.)*
- Did you bring Material Safety Data Sheets (MSDSs) for asphalt products used on the site?*

Begin: Common sense tells you that work with hot asphalt can cause burns. Molten paving asphalt is usually between 250° and 325° F. Roofing asphalt may be hotter than 450°.

Burns aren't the only hazard. When asphalt is heated, it may produce dangerous gases, vapors, and fumes. One example is hydrogen sulfide gas, which may build up when hot asphalt is stored in unventilated containers. Too much hydrogen sulfide gas can knock you out or kill you. The solvents, binders, and other chemicals used in asphalt can also be very hazardous. Some give off toxic vapors; some can catch fire or explode.

You or a crew member may want to add a personal story about asphalt.

Next, discuss with the crew where asphalt is used at this particular job site:



ASK THE CREW THESE QUESTIONS:

After each question, give the crew time to suggest possible answers. Use the information following each question to add points that no one mentions.

1. What is asphalt? Is it the same as coal tar?

- Asphalt is a black, sticky material that comes from crude oil. It's used in paving, roofing, waterproofing, and some glues.
- People often confuse asphalt with "coal tar" or "pitch." But since tar and pitch come from coal, not oil, they are different materials and have different hazards.

2. What are some ways that asphalt can harm you?

- **Fire and explosion:** Some asphalt products are highly **flammable**.
- **Skin and eye contact:** Hot asphalt can cause **burns**. Some people also get allergic skin reactions and **rashes** from contact with asphalt. You may get a condition similar to acne, or you may get skin spots. These can get worse if you work in bright sunlight or ultraviolet light (for example, when welding). Also, your eyes can get irritated from asphalt fumes, or if you touch your eyes with asphalt on your hands.
- **Breathing:** When asphalt products are heated, their **fumes** can irritate your nose, throat, or lungs. You may first notice a cough, scratchy throat, or mucus. You can get bronchitis or emphysema if you inhale asphalt fumes repeatedly.

Mixed with the asphalt fumes may be **hydrogen sulfide**, a very toxic gas. Breathing too much can cause dizziness, convulsions, coma, or death. Chemicals in asphalt products also produce **vapors** which you may inhale. The effects depend on the particular chemical. Some of these chemicals can damage the liver, kidneys, and nervous system (including the brain).

3. What ingredients in asphalt can cause these problems?

- Asphalt is originally solid or semi-solid. It is blended or “cut” with a **solvent** to make it more liquid. Hazardous solvents may be used, like naphtha, toluene, and xylene.
- Many other chemicals are used in asphalt products—binders, hardening agents, bonding agents, crushed rock, and sand. For example, a product might contain:
 - **styrene**, a toxic chemical that causes nervous system damage.
 - **asbestos** and **silica** in the rock and sand. Their dusts can cause lung disease.
- The composition of asphalt products is changing. Today, some paving asphalt is mixed with materials like resins and recycled rubber, which may add new hazards.

4. How can you find out what chemicals are in a particular asphalt product, and what their hazards might be?

- Check the **label** (if available). Look for a list of ingredients or a safety warning.
- Read the **Material Safety Data Sheet** (MSDS) for the product. MSDSs are required by law. They’ll tell you the ingredients and possible health and safety hazards. Everyone working on the site has a right to see MSDSs.

Let’s look at some MSDSs for asphalt products we use on this job.

Show the crew the sample MSDSs you brought to the meeting. Explain them briefly.



(MSDSs are covered in more detail during basic Hazard Communication training, which everyone on the crew should already have completed.)

5. What are some ways to work safely with asphalt?

- Use a **safer asphalt mix** if possible. “Rapid cure” asphalt products evaporate easier, so they’re more dangerous— there are more toxic vapors and more danger of fire.
- **Avoid breathing** hazardous substances. Never stick your head in an asphalt tank or mixing container. Never lean over a kettle. Stay upwind from asphalt if possible.
- **Enclose** mixing and stirring operations. Stirring asphalt in an open kettle exposes you to fumes, solvent vapors, and possible burns. Cover the kettle if you can.
- **Stop** what you’re doing if you notice symptoms. Ask your foreman for advice.
- Keep asphalt off your **skin** and out of your **eyes**. If you do get asphalt in your eyes, flush with water for 15 minutes.
- **Don’t eat, drink, or smoke** on the job. Anything you put in your mouth could have been contaminated by asphalt. Wash up first.

6. What personal protective equipment might you need if you work with asphalt?

- Thermally insulated **gloves** to keep asphalt from burning or irritating your skin. Cotton or leather gloves won’t work—solvents may soak through them.
- **Coveralls**, or a long sleeve shirt and long pants without cuffs. Keep your sleeves rolled down and close your collar.
- Steel-toed **safety shoes**.
- A **face shield**, not just safety glasses. Protect both your eyes and your face.
- A **respirator**. If your exposure to fumes, gases, or vapors may be higher than Cal/OSHA limits (*check the MSDS*), we must provide the right type of respirator, make sure it fits, teach you how to use it, and give you a physical to make sure you’re able to wear it safely. A dust mask may not be enough protection, especially in an enclosed area.

We will or will not require respirators on this job.

If required, personal protective equipment (PPE) and respirators are available at:



(PPE and Respirators are covered in more detail in separate Training Guides.)

7. How do you prevent fires and explosions when working with asphalt products?

- **Don’t smoke** around flammable vapors, and avoid **heat** and **sparks**. Don’t weld or braze an asphalt kettle or tank, even if it’s empty, until you check for vapors. Also watch out for sparking power tools.
- Keep **fire extinguishers** readily available, and make sure they are the right type. Different fire extinguishers are needed for different kinds of fires.

CAL/OSHA REGULATIONS

Explain: Most of the safety measures we’ve talked about are required by Cal/OSHA. We have to take these precautions—it’s the law. For example, Cal/OSHA says we must make sure no one on the site is exposed to more than **5 milligrams of asphalt fumes per cubic meter** of air, averaged over an 8-hour shift. This is called the **permissible exposure limit (PEL)** for asphalt. But there are much **lower** limits for hydrogen sulfide gas and the hazardous solvents found in some asphalt products. I have a Checklist of the Cal/OSHA regulations on asphalt. If you’d like to know more, see me after the meeting.

COMPANY RULES

(Only if applicable.) Besides the Cal/OSHA regulations, we have some additional company rules about working with asphalt.

Discuss company rules: _____



COMMENTS FROM THE CREW

Ask: **Do you have any other concerns about asphalt? Do you see any problems on our job?** *(Let the steward answer first, if there is one.)*

What about other jobs you’ve worked on? Have you had any experience with asphalt that might help us work safer on this job?

GENERAL SAFETY DISCUSSION

This is a time to discuss all safety concerns, not just today's topic. Keep your notes on this page before, during, and after the safety meeting.

Are you aware of any hazards from other crews? *Point out any hazards other crews are creating that this crew should know about. Tell the crew what you intend to do about those hazards.*

Do we have any old business? *Discuss past issues/problems. Report progress of investigations and action taken.*

Any new business? Any accidents/near misses/complaints? *Discuss accidents, near misses, and complaints that have happened since the last safety meeting. Also recognize the safety contributions made by members of the crew.*

Please remember, we want to hear from you about *any* health and safety issues that come up. If we don't know about problems, we can't take action to fix them.

To complete the training session:

- Circulate Sign-Off Form.*
- Assign one or more crew member(s) to help with next safety meeting.*
- Refer action items for follow-up. (Use the sample **Hazard Report Form** in the Reference Section of this binder, or your company's own form.)*

