

# Traffic Signal Synchronization

by Laura VanDerLinde, Communications Intern

**W**e've all been "stuck" in traffic, and it's probably safe to say that nobody enjoys it. You have time to "think" when you're stuck, like "Why is this light taking forever to change!?" or, "How do I manage to hit all the green lights on some streets, but all the red lights on others?"

Bob Turner is the Traffic Operations Engineer with the City of Spokane. His job is to promote safe traffic operation, including the synchronization of signal lights to effectively reduce waiting time, while allowing for pedestrian crossing and side street flow. The City operates 250 signals, the majority of which will be in a synchronization plan during some part of the day. Tightly spaced downtown intersections are synchronized 24 hours a day, while some remote intersections may not be synchronized at all.

The role of the traffic engineer may be compared to that of a medical professional in protecting the public. They

conduct research and analyze data to make decisions. Traffic engineers perform traffic counts, analyze collision statistics, study speed data, examine roadway conditions and conduct research. And like a doctor's diagnosis, the decision of the professional traffic engineer should be given prime consideration.

It's no surprise that primary traffic flows in Spokane have historically proven to be heavy inbound (toward downtown or the freeway) in the morning and heavy outbound (away from downtown or the freeway) in the evening. Signal timing is set to reflect those conditions.

"Everyone wants to go up and down Division and Ruby Streets without stops—but that delays every side street, such as Mission, Indiana and Sharp, which are the major east/west intersections, and people would be excessively delayed," Turner said.

"A cycle length for a signal is the length of time it takes to go from yellow, red, and back to green," Turner said. "Every second of green we give Ruby/Division is a second of red to the major east/west intersections. Increasing the "green" time at one intersection, increases the "red" time at another intersection. And, increasing "red" signal time can get drivers hot under the collar.

According to Turner's research, two and a half minutes is about the



*Bob Turner, City of Spokane Traffic Operations Engineer, stands by an advanced traffic computer system — technology that is improving traffic flow.*

maximum time people are willing to wait at a red light before frustration kicks in. When that happens, some drivers make rash decisions to move ahead, such as cutting through a residential neighborhood at rush hour. Turner says this in turn creates neighborhood safety concerns.

Technology has improved synchronization. An advanced central computer system communicates with almost all signals in real time. The purpose of the system is maintenance, monitoring, implementation and control of synchronizing traffic patterns. From an air quality perspective, keeping traffic flowing reduces idling time, therefore reduces emissions and fuel loss. When you're idling, you're getting zero miles to the gallon.

So, next time you're stuck at a red light, take a deep breath and know that the light is "green" for someone else, and your turn is coming—hopefully sooner than later!

For further information, contact the City's Traffic Operations Division, 509-232-8800. ■

<i>Inside . . .</i>	
Ask SCAPCA: Reusing Shop Rags	2
Recording Values and Decimals	3
Facility Odors	4
Vapor Recovery Equipment	4
<b>Business Spotlight:</b> Costco Gasoline Stations	5

## Measuring opacity for emissions points

When an inspector is checking for compliance with opacity limits, a number of factors come into play. Opacity means the percentage (0-100%) at which a visible emission (i.e. dust, smoke) obscures the background. A 5% opacity reading means that a background being viewed is obscured by 5%. Inspectors go through rigorous testing every six months to certify as opacity readers. The testing uses a machine that produces known densities of white and black smoke. The machine is calibrated at a number of standards prior to being used for certification purposes. In order to “certify,” an opacity reader must match the machine’s recorded readings, within specified ranges, for 50 continuous readings.

The basis for this type of certification is in the U.S. Environmental Protection Agency’s Method 9 - Visual Determination of Opacity of Emissions from Stationary Sources. Very specific criteria, such as observer-to-sun-to-source placement, must be met before a “legal reading” can be made by a certified opacity reader.

Generally, opacity from any emission point is limited to less than 20% for an aggregate of more than three minutes in any one hour. A different opacity limit may be enforced if a Notice of Construction has specified that a more stringent opacity limit. A few exceptions to the general opacity limit can be found in SCAPCA Regulation, Section 6.02. For a complete copy, go to [www.scapca.org](http://www.scapca.org), or call SCAPCA at 477-4727.

## Ask SCAPCA

**Q** *I use a laundry service for my solvent-laden shop rags. The company provides cloth collection bags that fit in stands, but there are no covers on the collection bags. Is this inconsistent with SCAPCA requirements?*

**a.** Many businesses registered with SCAPCA employ laundering services to clean their solvent-laden shop towels. This is recognized as a “Best Management Practice” because the shop towels are reused after laundering, thus reducing the extent and costs of hazardous waste disposal. But, if shop towels are not stored properly prior to pick up, they are a substantial source of volatile organic compound (VOC) emissions. Here’s why:

Solvent-laden shop towels, often used in printing and automotive operations, become a source of emissions when VOCs evaporate off the towels. VOCs are a contributor to ground-level ozone, a hazardous air pollutant. And many solvents contain toxic air pollutants, some of which are probable carcinogens.

**To minimize potential emissions, towels must be stored in closed metal containers until removed from the shop.**

It may not seem like storing solvent-laden shop towels in a cloth sack or hamper would create a lot of emissions. The following scenario illustrates the additional VOCs that result from this practice over one year:

Printing operations use shop towels to remove excess ink and press wash from presses during cleaning. A medium-sized print shop might use an average of one gallon of press wash for press cleaning per day. Each gallon of press wash contains 6.8 lbs/gal VOC. If these shop towels are not stored in a closed



metal container, all of the VOCs contained in the press wash, including the VOCs in the press wash laden towels, are lost to evaporation. If the shop towels are stored in a closed metal container following usage, 50% of the VOCs contained in the press wash are assumed to be retained in the shop towels (and the other 50% of VOCs contained in the press wash are lost to evaporation).

Lets do the math: If the print shop operates one shift, five days per week, 52 weeks per year, that equates to 1,768 lbs of VOC emitted to the air if the towels are not kept in closed metal containers. If the towels are properly stored in closed metal containers, only 884 lbs of VOC would be emitted.

When you consider how many printing and automotive repair operations there are in Spokane County, improperly stored shop towels collectively add up to many tons of additional VOC emissions yearly. In addition to air quality impacts, improper storage of solvent-laden shop towels may create a fire safety hazard as vapors accumulate in the workplace.

If you use a laundry service to re-use your shop towels, make sure you store your VOC containing shop towels in sealed metal containers. We’ll all breathe easier and be safer too. ■

# The Importance of Correct Decimal Places

... they're more than just a little "dot"



**A**re you or other employees at your facility required to read and record data from various equipment gauges?

Facilities regulated by SCAPCA often are required to record information, such as pressure drop, from various air pollution control devices and related equipment.

During site visits, SCAPCA inspectors are seeing a recurring problem when reviewing records: decimal points being used in the wrong places. This seemingly "minor" error can have a serious impact. Here's why:

Pressure drop tracking is one tool your business can use to determine if equipment is operating according to manufacturer's recommendations, thereby ensuring adequate control of air pollutants.

For this reason, accurately reading gauges and correctly recording pressure drop is very important. All operators need to be properly trained to read the scale on the gauge and record the numbers with correct decimal placement. If a decimal point is misplaced, even by just one point (e.g., 3.0 vs. 0.3), it makes a difference.

ator doesn't understand how to read the scale or doesn't correctly place the decimal point, the record shows a reading that indicates the booth was operated outside the manufacturer's recommended range.

When SCAPCA inspectors review such historic pressure drop readings showing that the booth was operated outside the manufacturer prescribed operating ranges, a violation notice may be issued.

*"A decimal point is more than just a little dot – it can mean the difference between compliance and noncompliance."*

SCAPCA recommends that business owners properly train employees on placement of decimal points and regularly review entries made by operators for accuracy. So, keep in mind — a decimal point is more than just a little dot — it can be the difference between compliance and non-compliance at your facility. ■

For example, the manufacturer recommended pressure drop range for a paint booth might be 0.2" to 0.35" of water column (w.c.) If an operator reads and/or records the pressure drop off the gauge as 2.5" of w.c., instead of 0.25" of w.c., either because the oper-

ator doesn't understand how to read the scale or doesn't correctly place the decimal point, the record shows a reading that indicates the booth was operated outside the manufacturer's recommended range.

## Changes? *Are you changing ownership, closing shop, upgrading equipment, etc.?*

SCAPCA registers and routinely inspects about 650 facilities throughout Spokane County. Registration involves annual reporting and payment of fees, as well as periodic inspections.

**When Ownership Changes** — When ownership of a facility, registered with SCAPCA, has transferred to another party, the new owner or operator must report the change of ownership or change of operator to SCAPCA within 90 days of the change. New owners or operators should be aware that any liability for fee payment, including payment of delinquent fees and other penalties, survives any transfer of ownership.

**Permanent Closure** — If a business closes or permanently removes all equipment that formerly released air contaminants, the owner or operator must report the closure to SCAPCA within 90 days of the closure. Once SCAPCA receives notice of closure, a final bill for any fees incurred for operating during that calendar year (if they haven't already been paid) will be invoiced.

**Temporary Closure** — In the event the owner or operator chooses to discontinue operations, but continues to pay the annual registration fee to SCAPCA, the registration and status of the equipment will be maintained as if the facility were still in operation.

In this situation, reporting the closure isn't necessary. Registration may be continued for up to two years after the air contaminant source has discontinued operation. There are advantages to maintaining registration of an air contaminant source. Once an air contaminant source has been reported "closed" to SCAPCA, a new Notice of Construction application for approval by SCAPCA will likely be required prior to operating the air contaminant source again. Approval may be contingent on upgrading pollution controls.

**Equipment Changes/Modifications** Prior to making any changes to your equipment or processes, be sure to contact SCAPCA at 477-4727. A new NOC may be required. More information and forms are available at [www.scapca.org](http://www.scapca.org), click on, "Business Info." ■

# You just can't ignore the odors



Odors are a concern in our community, and a frequent source of citizen complaints to SCAPCA. Odors are generated by a wide range of operations, including asphalt production, livestock feedlots, wastewater treatment plants, coffee roasters, and many other operations. Odors from your business activity can impact your neighbors. This article is intended to help you identify whether you have a problem and what to do about it.

## When does an odor become a public nuisance?

An odor becomes a public nuisance if it **unreasonably** interferes with the use or enjoyment of property. If this is the case, the individual or commercial operation must use recognized good practices and procedures to reduce the odor to a **reasonable** minimum.

## Does your facility have an odor problem?

Have your neighbors or employees complained to you about offensive odors from your facility? Detectable odors may indicate unsafe chemical concentrations. Even if the odor is not harmful to health, an odor that interferes with use or enjoyment of property by members of the community may necessitate regulatory action by SCAPCA.

## What should you do?

Working around an odor constantly can desensitize you to it. You may need to get outside help to identify the chemical or material causing the odor and evaluate the following:

✓ Does the odor coincide with specific operations, weather, and wind conditions, or times of day?

✓ Is it detectable both inside and outside your facility? If it is only present outside, check for elevated sources such as vents and stacks.

✓ Where is the odor strongest? Places to check: drains and sewer conduits, open tanks and other containers, pumping and loading stations, vents

✓ Did the odor appear suddenly, or has it been present for awhile? If it appeared suddenly, look for spills or leaks and examine recent modifications to your facility

✓ Is the odor present all the time or only sometime? If it comes and goes, check cleaning and painting operations or other intermittent processes.

## How can you solve the problem?

Don't mask the odor by spraying the area with a stronger but less offensive odor. This is not an acceptable solution under Washington regulations. If you plan to introduce a reactive agent to chemically treat the odor, check with SCAPCA before taking any action. Depending on the source of the odor, you may need to consider the following:

✓ Change or upgrade equipment (contact SCAPCA prior to doing so)

✓ Use different supplies and materials that do not generate offensive odors

✓ Practice better housekeeping (e.g. clean up spills immediately, practice spill prevention)

✓ Conduct regular leak detection and repair. Focus attention on fittings, valve packing, pump seals, and flanges.

✓ Install emissions control technology (consult with SCAPCA on permit requirements)

✓ Keep containers closed whenever possible.

✓ Contact SCAPCA for further compliance assistance, 477-4727. ■

## Vapor Recovery Equipment Needs Attention

SCAPCA inspects gasoline dispensing facilities periodically to ensure air pollution control equipment is maintained and operating properly. During inspections, problems with vapor recovery equipment are frequently encountered, which can substantially impede the capture and collection of vapors from entire systems, resulting in higher emissions.

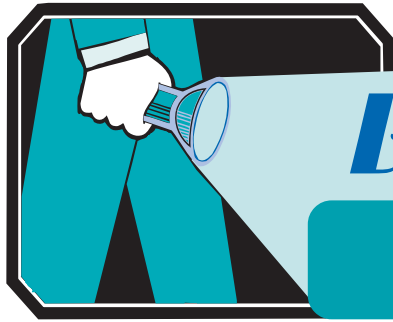
Gasoline dispensing facilities must regularly inspect equipment to check for, and promptly correct, any of the following problems:

### Stage I vapor recovery systems:

- ◆ loose/missing product or vapor caps
- ◆ missing or damaged product or vapor cap gaskets
- ◆ loose product or vapor adaptors
- ◆ inoperable springs or misaligned vapor poppets
- ◆ damaged/missing poppet gaskets
- ◆ damaged/missing fill tube gaskets
- ◆ open/leaking spill bucket drain valves

### Stage II vapor recovery systems:

- ◆ missing latch coil or ring
- ◆ oversized boot holes or slits
- ◆ damaged/missing bellows faceplate
- ◆ defective boot insertion interlock
- ◆ hose has cuts or holes, or is flattened or kinked
- ◆ incorrect hose fuel flow direction
- ◆ visible gasoline leaks



# Business Spotlight

## Costco Gasoline

### Costco Gasoline Stations Set the Bar for Excellence

Many people shop at area Costco stores because of their wholesale pricing on goods and services. And many Costco members take advantage of the convenient Costco gasoline stations, located at the two Spokane Costco stores.

Aside from convenience and helpful attendants on site, Costco members may not realize what goes on “behind the scenes,” when it comes to selling gasoline.

“It is obvious during compliance inspections, that Costco places great importance on proper operation and maintenance of their fueling systems,” according to Crystal Alford, an air quality specialist at SCAPCA. “This dedication results in measureable reductions of air emissions, from both the filling of underground storage tanks and during vehicle refueling.”

Gasoline dispensing facilities are a source of Volatile Organic Compounds (VOCs), which are released to the air during refilling of underground storage tanks and during vehicle refueling. VOCs are precursors to formation of ground-level ozone, a hazardous air pollutant.

Both Costco refueling locations in Spokane have Stage I and Stage II vapor recovery equipment, which collect vapors from both underground storage tank filling and vehicle refueling. This equipment consists of multiple components includ-

ing caps, gaskets, adaptors, hoses, nozzles, etc. When even one of the vapor recovery components is defective, the integrity of the entire system is compromised and leaks occur. Vapor recovery components are prone to damage, due to the corrosive properties of gasoline, exposure to the elements, and repetitive usage. Therefore, it is critical that operators regularly inspect each component and replace damaged or defective parts when discovered.

SCAPCA encourages facilities to use self inspection checklists for vapor recovery systems and to observe gasoline deliveries to ensure that equipment is properly operated and maintained. When all of the components are in good operating condition, the combined Stage I and II vapor recovery systems provide up to an 87% reduction in total VOC emissions. *See related article “Vapor Recovery Equipment Needs Attention,” on page 4*

“Our top priority is providing our members with a high quality product in a safe, clean environment,” said Rodney G. Erickson, Costco Gas Station Manager.

Costco has a dedicated employee whose sole job is to monitor the



*Costco operates gasoline stations at their two Spokane area Costco Wholesale Stores.*

operations of the gasoline dispensing facility. This employee is responsible for, among other things, inspecting the vapor recovery equipment, observing gasoline deliveries to the underground storage tanks, and monitoring vehicle refueling. Public access to pumps and gasoline deliveries to the underground storage tanks are limited to specific hours of operation, which means that no deliveries of fuel are received, nor vehicles refueled outside the hours when Costco personnel are present.

The oversight provided by Costco personnel and their constant attention to maintaining their vapor recovery equipment defect-free is what sets Costco apart when it comes to highlighting good operation and maintenance practices. SCAPCA commends Costco for striving for high standards of environmental compliance. ■

# Air · Quality · Calendar

**UPDATE** is published quarterly by Spokane County Air Pollution Control Authority (SCAPCA) as part of its Compliance Assistance Program. Comments, suggestions and story ideas may be directed to Update Editor Lisa Woodard.

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SCAPCA's Board of Directors conducts their monthly meeting on the first Thursday of each month, unless otherwise publicized. The meeting begins at 9 a.m., in the lower level Commissioners Hearing Room, Spokane County Public Works Building, 1026 W. Broadway Ave. Meeting agendas are available at [www.scapca.org](http://www.scapca.org). For more information, please call 477-4727.

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| Aug. 4:      | Cancelled: SCAPCA Board of Directors monthly board meeting.  |
| Aug. 18:     | Special SCAPCA Board Meeting. The Chair of the SCAPCA Board has called for a special meeting of the Board to provide opportunity for Inland Asphalt and Northwest Renovators to register their complaints regarding permitting decisions made by SCAPCA staff. The meeting will take place at 9 a.m., Rm 320, Spokane Regional Health Building, W. 1101 College Ave. |
| Coming Soon: | Two Compliance Assistance Workshops will be offered later this year for the drycleaning industry and gasoline dispensing industry. Watch for informational mailings coming soon!   |

## Spokane County Air Pollution Control Authority 2005 Board of Directors:

Matthew Pederson, Chair, Small Cities & Towns Representative  
Michele Pope, Vice Chair, Member-at-Large  
Mike Brewer, City of Spokane Representative  
Phillip Harris, Spokane County Commissioner  
Todd Mielke, Spokane County Commissioner

This newsletter is available electronically via SCAPCA's website. To add or remove names to **UPDATE** mailing list, call 477-4727, ext. 115.

## UPDATE

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