

CHAPTER

6

Synthetic Organic Chemicals (SOCs)

Synthetic Organic Chemicals (SOCs) are carbon-based compounds of man-made origin that can get into water through runoff from croplands or discharge from factories. SOCs may also come from urban storm water runoff and septic systems. There are 33 regulated SOCs (30 SOCs are both state and federally regulated while 3 are only regulated by the state). This chapter will discuss these 33 SOCs and explain the monitoring requirements.

Illinois EPA Assistance

In most cases, as a monitoring requirement approaches for a community water system (CWS), the Illinois EPA will send reminder notifications that detail the requirement and specific timeline for completion. Please remember that these are “reminder” notifications and does not relieve the CWS in meeting the monitoring schedule deadlines. If a CWS is unsure of its schedule or timeframe described in any Illinois EPA notification, it is very important that the CWS contact the Drinking Water Compliance Unit at 217/785-0561 for clarification. All SOC correspondence should be sent to:

SOC Coordinator
Illinois EPA /BOW/CAS #19
P.O. Box 19276
Springfield, IL 62794-9276
Telephone: 217-785-0561
Fax 217-557-1407

Sample Bottles

If your supply participates in the Community Water Supply Testing Fund (CWSTF), sample containers will be sent to your supply during the monitoring period. If your supply does **not** participate in the CWSTF, it is your responsibility to have all testing completed by an Illinois EPA certified laboratory and submitted on the correct reporting forms. The SOC certified laboratory reporting form is available on the Internet (see next page). This form must be submitted within 10 days after the end of a monitoring period. If the laboratory you choose submits data electronically, it is not necessary to submit a paper copy. However, it is the responsibility of the CWS to insure data reaches the Illinois EPA within 10 days of the end of the monitoring period.

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Certified Laboratory Result Reporting Forms can be downloaded at:

<http://www.epa.state.il.us/water/forms.html#compliance-and-enforcement-drinking-water>

If Internet access is unavailable, please contact the SOC Coordinator at 217-785-0561 for a copy of this form.

SOC Sample Locations

SOC samples must be collected at locations that represent each well or surface water source after all treatment but prior to entering the distribution system. If water from several sources is combined and treated at a common location, then one sample can be collected to represent all combined sources.

If a well pumps directly to the distribution system (no added treatment), then a representative sample must be collected prior to the first distribution location. This is not a common situation.

On occasion the Illinois EPA will require a SOC sample to be collected directly from a well prior to treatment. If the case, the sample collector will receive specific sample collection instructions.

Monitoring Requirements

Initially, per sample location as specified above, SOC samples are collected quarterly for a minimum of four consecutive quarters. Once a base line is established with no detections for a sample location, monitoring can be reduced to triennial for ground water supplies and annual for surface water supplies.

Ground water supplies on a triennial monitoring frequency serving more than 3,300 people must collect two SOC samples within a 12 month period in each three year cycle. The two samples cannot be collected within 90 days of each other.

Surface water supplies on an annual monitoring frequency are required to collect the SOC sample during the April through June period. Failure to do so would result in a monitoring violation.

Quarterly monitoring must be initiated for any new source of water (i.e. new well). Reduced monitoring for new sources will be considered once four consecutive quarterly samples are collected without detection.

Dioxin monitoring is only required if the Illinois EPA determines the contaminant was used in the proximity of the CWS source(s) of water. If the CWS is required to monitor, they will be notified in writing.

Please remember that several factors influence monitoring requirements; such as, violation of regulations, new regulations, and/or contaminant detections. It is recommended that each CWS water operator and/or sample collector periodically (at least quarterly) download a new schedule since monitoring schedules change frequently. A CWS can download their most current monitoring schedule at:

<http://www.epa.state.il.us/water/compliance/drinking-water/sdwis/index.html>

Monitoring Requirements for Sample Locations with SOC Detections

Quarterly monitoring must continue for any detected SOC until results demonstrate “reliably and consistently” low results. Groundwater CWS must demonstrate results “reliably and consistently” below one half of the Maximum Contaminant Level (MCL) for a minimum of two consecutive quarters. Surface water system must demonstrate results “reliably and consistently” below the laboratory detection limit for a minimum of four consecutive quarters. Once this has been established, the CWS/sample location may qualify for reduced monitoring.

Monitoring Requirements for Back-up and/or Emergency Wells

All wells that are active and are either on back-up or emergency status must be monitored every three years. If the CWS purchases its primary source of water from another CWS, annual samples are required from the well(s). There is no exception to this requirement.

If there is detection below the MCL, the CWS may be required to locate the source of the contamination and remediate.

If there is detection above the MCL, the CWS will be required to locate the source of the contamination and remediate in an established amount of time or properly abandon the well.

Reduced Monitoring Following Detections

The Illinois EPA will periodically review sample data to determine if a sample location qualifies for reduced monitoring. If a sample location qualifies, the Illinois EPA will send written notification to the CWS that sampling has been reduced.

As mentioned, this is a periodic review. It is strongly recommended that the CWS routinely evaluate their data. If it is felt that a sample location qualifies for reduced monitoring, a request in writing should be sent to the SOC Coordinator (address on page 1 of this Chapter).

When a sample location is eligible for reduced monitoring, it will move from a quarterly frequency to an annual frequency. For ground water supplies only, after three years of annual samples, the sample frequency may be further reduced to triennial if no detections have occurred. Surface water supplies are not allowed to be reduced to triennial.

A sample location reduced from quarterly to annual monitoring must be scheduled to be collected during the calendar quarter in which the highest quarterly detection occurred for that contaminant. This is a requirement and if the sample is not collected during the specified quarter it will result in a monitoring violation (example on next page).

EXAMPLE

A CWS is required to collect quarterly atrazine samples due to a routine SOC sample detection. This CWS is a ground water supply, thus will need two consecutive quarters of results below $\frac{1}{2}$ the MCL for atrazine to qualify for reduced annual sampling. The MCL for atrazine is 3ug/L, so $\frac{1}{2}$ of the MCL would be 1.5ug/L.

Sample Location	Date Collected	Atrazine Concentration (ug/l)
TP01 Well 1	01/06/07	2.9
TP01 Well 1	04/22/07	4.4
TP01 Well 1	08/02/07	Not Detected
TP01 Well 1	10/03/07	1.9
TP01 Well 1	01/16/08	0.6
TP01 Well 1	04/02/08	0.7

CWS now has two quarters of results “reliably and consistently” below $\frac{1}{2}$ the MCL (yellow). The CWS is now eligible for reduced annual monitoring. The annual sample must be collected during the calendar quarter in which the highest quarterly detection occurred (blue) or in this example, the April thru June quarter. If at any time atrazine is again detected above $\frac{1}{2}$ the MCL, quarterly monitoring will resume.

TP01 Well 1	04/02/09	0.7
TP01 Well 1	04/22/10	Not Detected
TP01 Well 1	04/09/11	Not Detected
TP01 Well 1	4/15/12	Not Detected

Three annual sample with no detections qualifies for triennial monitoring

TP01 Well 1	04/18/15	Not Detected
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At this point, any new detection would result in quarterly monitoring.

SOC Vulnerability Waiver Program

The Illinois EPA has a “vulnerability waiver” program that many systems already utilize which allows SOC monitoring to be reduced to one sample per sample location every nine years.

The objective of the SOC vulnerability monitoring waiver program is to reduce monitoring, while assuring the safety of the drinking water currently provided by the public water supplies. The intent of this program is to recognize where natural protection exists by differentiating between confined and unconfined aquifer systems. A confined aquifer more readily qualifies for a waiver. For aquifers determined to be unconfined this program includes: mapping the 5-year recharge area; identifying potential sources and routes of contamination located within the recharge area; contingency planning; and managing potential sources and potential routes of contamination, thereby reducing vulnerability to contamination. The program requires the identification and sealing of potential routes of contamination located within 1,000 feet of wells.

To obtain a waiver, the CWS must evaluate the vulnerability of their wells to potential contamination sources. Systems vulnerable to contamination must develop a management program for controlling potential contamination sources and routes. If a CWS is interested and would like more information, please call the SOC coordinator at 217-785-0561. The application is on line at:

<http://www.epa.state.il.us/water/compliance/drinking-water/forms/phase-2-and-5-monitoring-waiver-application-and-instructions.pdf>

Compliance with the SOC Maximum Contaminant Levels (MCL)

Compliance is based on the running annual average of quarterly samples. This is calculated for each entry point to the distribution system. If one sample location is out of compliance, the entire system is out of compliance unless that part of the system is entirely separate (no inter-connections) from the rest of the system.

If any single sampling result is high enough to cause the annual average to be exceeded, the supply is out of compliance immediately (for example, the analytical result is greater than four times the MCL or two analytical results are greater than twice the MCL, etc.).

Systems monitoring annually or triennially whose sample result exceeds the MCL, must revert to quarterly sampling for that contaminant the next quarter. Systems are only required to conduct quarterly monitoring at the sampling point at which the sample was collected and for the specific contaminant that triggered the system into the increased monitoring frequency. An exceedance is not necessarily a violation. Systems triggered into increased monitoring will not be considered in violation of the MCL until they have completed one year of quarterly sampling unless any sample collected during quarterly monitoring would result in the annual average exceeding the MCL.

Systems may monitor more frequently than quarterly. Samples must be clearly marked as “compliance/routine samples” prior to being submitted to the laboratory (and not after the results are known). All samples must be used when determining compliance (the system cannot pick and choose results) unless the samples are clearly marked as “special”. Samples marked as “special” samples will not be used for compliance and cannot later be changed to routine samples so that they will be counted for compliance. There are no exceptions to this rule.

If a system does not collect all required quarterly samples, compliance will be based on the running annual average of the samples that were collected. If a sample result is less than the reporting limit, zero will be used to calculate the annual average.

The Illinois EPA has the flexibility to require confirmation samples for positive or negative results. The Illinois EPA may require more than one confirmation sample to determine the average exposure. If confirmation samples are required by the Illinois EPA, the average of the analytical result and the confirmation sample will be used for compliance determinations.

Examples

Example 1: A ground water supply was on triennial monitoring at TP01 Well 1. Atrazine was detected in the sample collected on 10/18/2007 at 5.6ug/L. The detection triggered quarterly monitoring. The MCL for atrazine is 3ug/L.

Sample Location	Date Collected	Single Result (ug/L)	*Quarterly Average	Running Annual Average
TP01 Well 1	10/18/07	5.6	5.6	$5.6 / 4 = 1.4$ (no MCL)
TP01 Well 1	01/05/08	5.9	5.9	$5.6 + 5.9 / 4 = 2.8$ (no MCL)
TP01 Well 1	04/20/08	6.3	6.3	$5.6 + 5.9 + 6.3 / 4 = 4.4$ (MCL Violation)
TP01 Well 1	07/08/08	6.2	0.7	$5.6 + 5.9 + 6.3 + 0.7 / 4 = 4.6$ (MCL Violation)
TP01 Well 1	10/02/08	5.4	1.4	$5.9 + 6.3 + 0.7 + 1.4 / 4 = 3.5$ (MCL Violation)
TP01 Well 1	01/05/09	2.4	Not Detected	$6.3 + 0.7 + 1.4 + 0 / 4 = 2.1$ (no MCL)

* Only one sample collected per quarter

The water supply had 3 quarters in which the running annual average exceeded the MCL; therefore, the water supply was in violation. Public notice is required for these three quarters (see Chapter 1 Public Notification for requirements).

In this example, the water supply would remain on quarterly monitoring until it could demonstrate reliably and consistently results below 1.5 ug/L for a minimum of two consecutive quarters. See “Monitoring Requirements for Sample Locations with SOC Detections” of this Chapter.

If more than one sample is collected during the quarter from the same sample location, the samples are averaged to calculate a quarterly average. See example below.

Example 2: A water supply was on triennial monitoring at TP02 Well 2. Atrazine was detected at 23.3ug/L in the sample collected on 10/18/2007. A confirmation sample was collected on 11/12/07 and was 5.2ug/L. The detections triggered quarterly monitoring. The MCL for atrazine is 3ug/L.

Sample Location	Date Collected	Single Result (ug/L)	Quarterly Average	Running Annual Average
TP02 Well 2	10/18/07	23.3	$23.3 + 5.2 / 2 = 14.2$	$14.2 / 4 = 3.5$ (MCL violation)
TP02 Well 2	11/12/07	5.2		
TP02 Well 2	2/12/08	6	6	$14.2 + 6 / 4 = 5$ (MCL Violation)
TP02 Well 2	04/20/08	0.6	0.6	$14.2 + 6 + 0.6 / 4 = 5.2$ (MCL Violation)
TP02 Well 2	07/08/08	4	$4 + 0.9 / 2 = 2.4$	$14.2 + 6 + 0.6 + 2.4 / 4 = 5.8$ (MCL Violation)
TP02 Well 2	8/2/08	0.9		
TP02 Well 2	10/02/08	No detect	0	$6 + 0.6 + 2.4 + 0 / 4 = 2.2$ (no MCL)
TP02 Well 2	01/05/09	0.9	0.9	$0.6 + 2.4 + 0 + 0.9 / 4 = 0.9$ (no MCL)

The water supply had 4 quarters in which the running annual average exceeded the MCL; therefore, the water supply was in violation. Public notice is required for these four quarters (see Chapter 1 Public Notification for requirements).

SOC Contaminants

Below are the 33 regulated SOCs.

2,4-D <i>(State has imposed a more stringent MCL)</i>	MCL = 10 ug/L (or 10 parts per billion) (State) MCL = 70 ug/L (or 70 parts per billion) (Federal)
2,4-D is a colorless, odorless powder used as a herbicide for the control of broad-leaf weeds in agriculture, and for control of woody plants along roadsides, railways, and utilities rights of way. It has been most widely used on such crops as wheat and corn, and on pasture and rangelands.	
2,4,5-TP (Silvex)	MCL = 50 ug/L (or 50 parts per billion)
2,4,5-TP is a white organic powder with little odor. Its use has been banned since 1985. The greatest use of 2,4,5-TP was as a postemergence herbicide for control of woody plants, and broadleaf herbaceous weeds in rice and bluegrass turf, in sugarcane, in rangeland improvement programs, on lawns. Aquatic uses included control of weeds in ditches and riverbanks, on floodways, along canals, reservoirs, streams, and along southern waterways.	
Alachlor	MCL = 2 ug/L (or 2 parts per billion)
Alachlor is an odorless, white solid. The greatest use of alachlor is as a herbicide for control of annual grasses and broadleaf weeds in crops, primarily on corn, sorghum and soybeans. Alachlor is the second most widely used herbicide in the United States, with particularly heavy use on corn and soybeans in Illinois, Indiana, Iowa, Minnesota, Nebraska, Ohio, and Wisconsin.	
Aldrin <i>(This is only regulated by the State)</i>	MCL = 1 ug/L (or 1 part per billion) (State Only)
Aldrin's common source of contamination in drinking water includes runoff from use as an insecticide and has not been used since 1987.	
Atrazine	MCL = 3 ug/L (or 3 parts per billion)
Atrazine is a white, crystalline solid organic compound. It is a widely used herbicide for control of broadleaf and grassy weeds. Atrazine was estimated to be the most heavily used herbicide in the United States in 1987/89, with its most extensive use for corn and soybeans in Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, Ohio, Texas, and Wisconsin. Effective in 1993, its uses were greatly restricted.	
Benzo(a)pyrene (BaP)	MCL = 0.2 ug/L (or 0.2 parts per billion)
Benzo(a)pyrene, or BaP, is one of a group of compounds called polycyclic aromatic hydrocarbons (PAHs). They are not produced or used commercially but are very commonly found since they are formed as a result of incomplete combustion of organic materials.	
Carbofuran	MCL = 40 ug/L (or 40 parts per billion)
Carbofuran is a white crystalline solid with a slightly phenolic odor. This broad spectrum insecticide is sprayed directly onto soil and plants just after emergence to control beetles, nematodes and rootworm. The greatest use of carbofuran is on alfalfa and rice, with turf and grapes making up most of the remainder. Earlier uses were primarily on corn crops.	
Chlordane	MCL = 2 ug/L (or 2 parts per billion)
Chlordane is a viscous liquid, colorless to amber, with a slight chlorine-like aromatic odor. It was used on corn, citrus, deciduous fruits and nuts, vegetables; for home, garden and ornamentals; lawns, turf, ditchbanks and roadsides. It was applied directly to soil or foliage to control a variety of insect pests including parasitic roundworms and other nematodes, termites, cutworms, chiggers, leafhoppers. The only commercial use of chlordane products still permitted is for fire ant control in power transformers.	
Dalapon	MCL = 200 (or 200 parts per billion)
Dalapon is a colorless liquid with an acrid odor sold as sodium or magnesium salt. Dalapon is a herbicide used to control grasses in a wide variety of crops, including fruit trees, beans, coffee, corn, cotton and peas. It is also registered for use in a number of non-crop applications such as lawns, drainage ditches, along railroad tracks, and in industrial areas.	

Total DDT (<i>This is only regulated by the State</i>)	MCL = 50 ug/L (or 50 parts per billion) (State Only)
Total DDT's common source of contamination in drinking water includes runoff from use as a contact insecticide.	
Di(2-ethylhexyl) Adipate	MCL = 400 ug/L (or 400 parts per billion)
Di(2-ethylhexyl) Adipate is a light-colored, oily liquid with an aromatic odor. It is used in making plastics. It is also used as a solvent; in aircraft lubricants; as a hydraulic fluid; as a plasticizer or solvent in the following cosmetics: bath oils, eye shadow, cologne, foundations, rouge, blusher, nail-polish remover, moisturizers and indoor tanning preparations; in meat wrapping operations.	
Di(2-ethylhexyl) Phthalate (DEHP)	MCL = 6 ug/L (or 6 parts per billion)
Di (2-ethylhexyl) Phthalate, or DEHP, is the most commonly used of a group of related chemicals called phthalates or phthalic acid esters. The greatest use of DEHP is as a plasticizer for polyvinylchloride (PVC) and other polymers including rubber, cellulose and styrene. A number of packaging materials and tubings used in the production of foods and beverages are polyvinyl chloride contaminated with phthalic acid esters, primarily DEHP.	
Dibromochloropropane (DBCP)	MCL = 0.2 ug/L (or 0.2 parts per billion)
Dibromochloropropane, or DBCP is a dense yellow organic liquid with a pungent odor. It is used primarily as an unclassified nematocide for soil fumigation of cucumbers, summer squash, cabbage, cauliflower, carrots, snap beans, okra, aster, shasta daisy, lawn grasses and ornamental shrubs.	
Dieldren (<i>This is only regulated by the State</i>)	MCL = 1 ug/L (or 1 part per billion) (State Only)
Dieldren's common source of contamination in drinking water includes runoff from use as an insecticide and has not been used since 1987.	
Dinoseb	MCL = 7 ug/L (or 7 parts per billion)
Dinoseb is an organic solid - yellowish crystals with a pungent odor. Its greatest use is as a contact herbicide for post-emergence weed control in cereals, undersown cereals, seedling lucerne and peas. Dinoseb is also used as a corn yield enhancer and an insecticide and miticide.	
Dioxin (2,3,7,8-TCDD)	MCL = 0.00003 ug/L (or 0.00003 parts per billion)
Dioxin is an organic solid of white crystalline needles. Dioxin is not produced or used commercially in the US. It is a contaminant formed in the production of some chlorinated organic compounds, including a few herbicides such as silvex. It may also be formed during combustion of a variety of chlorinated organic compounds.	
Diquat	MCL = 20 ug/L (or 20 parts per billion)
Diquat is an organic solid of colorless or yellow crystals. A water solution is dark red-brown. Diquat is a herbicide that has been used extensively in the US since the late 1950s to control both crop and aquatic weeds. It is used on potatoes; as an aid in harvesting cotton, rapeseed and other oil seed crops; to wilt and dry out silage, standing hay, etc. for storage; a plant growth regulator and sugar cane-flowering suppressant.	
Endothall	MCL = 100 ug/L (or 100 parts per billion)
Endothall is an organic solid of white odorless crystals. Endothall is used as a defoliant for a wide range of crops and as a herbicide for both terrestrial and aquatic weeds. It is used as a desiccant on lucerne and on potato, for the defoliation of cotton, to control aquatic weeds and as an aquatic algicide growth regulator. It has been used for: sugar beets, turf, hops sucker suppression; alfalfa, clover desiccants; potato vine killers.	
Endrin	MCL = 2 ug/L (or 2 parts per billion)
Endrin is an organic solid of odorless white crystals. Endrin is an insecticide which has been used mainly on field crops such as cotton, maize, sugarcane, rice, cereals, ornamentals, and other crops. It has also been used for grasshoppers in non-cropland and to control voles and mice in orchards. Once widely used in the US, most uses were canceled in 1980.	

Ethylene Dibromide (EDB)	MCL = 0.05 ug/L (or 0.05 parts per billion)
Ethylene dibromide (EDB) is a colorless, heavy organic liquid with a mildly sweet chloroform-like odor. Ethylene dibromide is mainly used in anti-knock gasoline mixtures, particularly in aviation fuel. Other uses include: as a solvent for resins, gums, and waxes; in waterproofing preparations; in making dyes and drugs; and as a pesticide for grains and fruit.	
Glyphosate	MCL = 700 ug/L (or 700 parts per billion)
Glyphosate is an organic solid of odorless white crystals. It is a non-selective herbicide used on many food and non-food crops as well as non-crop areas such as roadsides. When applied at lower rates, it serves as a plant growth regulator. The most common uses include control of broadleaf weeds and grasses in: hay/pasture, soybeans, field corn; ornamentals, lawns, turf, forest plantings, greenhouses, rights-of-way.	
Heptachlor <i>(State has imposed a more stringent MCL)</i>	MCL = 0.1 ug/L (or 0.1 parts per billion) (State) MCL = 0.4 ug/L (or 0.4 parts per billion) (Federal)
Heptachlor is a white to tan waxy organic solid with a camphor-like odor. The epoxide is formed from heptachlor in the environment. It was once used as a non-agricultural insecticide. Most uses of the product were canceled in 1978. The only permitted commercial use of heptachlor products is for fire ant control in buried, pad-mounted electric power transformers, and in underground cable television and telephone cable boxes.	
Heptachlor Epoxide <i>(State has imposed a more stringent MCL)</i>	MCL = 0.1 ug/L (or 0.1 parts per billion) (State) MCL = 0.2 ug/L (or 0.2 parts per billion) (Federal)
Heptachlor Epoxide is a breakdown of heptachlor. Heptachlor is a white to tan waxy organic solid with a camphor-like odor. The epoxide is formed from heptachlor in the environment. It was once used as a non-agricultural insecticide. Most uses of the product were canceled in 1978. The only permitted commercial use of heptachlor products is for fire ant control in buried, pad-mounted electric power transformers, and in underground cable television and telephone boxes.	
Hexachlorobenzene (HCB)	MCL = 1 ug/L (or 1 parts per billion)
Hexachlorobenzene (HCB) is an organic solid of white crystalline needles. It is produced as a by-product from the manufacture of a variety of other regulated organic chemicals. It is also a contaminant in the production of some pesticides. The greatest use of HCB is in making other organic compounds such as rubber, dyes, wood preservatives. Other uses of include: as a fungicide on grains, especially wheat.	
Hexachlorocyclopentadiene (HEX)	MCL = 50 ug/L (or 50 parts per billion)
Hexachlorocyclopentadiene (HEX) is an oily, yellow-green organic liquid with a pungent odor. Its greatest use is as a raw material in manufacturing other chemicals, including pesticides, flame retardants, resins, dyes, pharmaceuticals, plastics, etc. HEX has no end uses of its own.	
Lindane	MCL = 0.2 ug/L (or 0.2 parts per billion)
Lindane is a white crystalline organic solid. Most uses being restricted in 1983, lindane is currently used primarily for treating wood-inhabiting beetles and seeds. It is also used as a dip for fleas and lice on pets, and livestock, for soil treatment, on the foliage of fruit and nut trees, vegetables, timber, ornamentals and for wood protection.	
Methoxychlor	MCL = 40 ug/L (or 40 parts per billion)
Methoxychlor is a colorless organic solid with a slightly fruity odor. It is an insecticide preferred to DDT for use on animals, in animal feed, and on DDT-sensitive crops such as squash, melons, etc. Since methoxychlor is more unstable than DDT, it has less residual effect. It has been used extensively in Canada for the control of biting flies, and is also effective against mosquitoes and houseflies.	
Oxamyl (Vydate)	MCL = 200 ug/L (or 200 parts per billion)
Oxamyl is a white crystalline organic solid with a slight sulfurous odor. It is widely used for control of insects, mites and nematodes on field crops, fruits and ornamentals. The majority of oxamyl is applied to apples, potatoes, and tomatoes.	

Pentachlorophenol (PCP)	MCL = 1 ug/L (or 1 parts per billion)
Pentachlorophenol (PCP) is a white organic solid with needle-like crystals and a phenolic odor. The greatest use of pentachlorophenol is as a wood preservative (fungicide). Though once widely used as an herbicide, it was banned in 1987 for these and other uses, as well as for any over-the-counter sales.	
Picloram	MCL = 500 ug/L (or 500 parts per billion)
Picloram is a crystalline organic solid with a chlorine-like odor. It is used in salt form as a systemic herbicide for controlling annual weeds on crops, and in combination with 2,4-D or 2,4,5-T against perennials on non-croplands for brush control. Picloram is used to control bitterweed, knapweed, leafy spurge, locoweed, larkspur, mesquite, prickly pear, and snakeweed on rangeland in the western states.	
Polychlorinated biphenyls (PCBs)	MCL = 0.5 ug/L (or 0.5 parts per billion)
Polychlorinated biphenyls (PCBs) are a group of organic chemicals which can be odorless or mildly aromatic solids or oily liquids. They were formerly used in the USA as hydraulic fluids, plasticizers, adhesives, fire retardants, way extenders, de-dusting agents, pesticide extenders, inks, lubricants, cutting oils, in heat transfer systems, carbonless reproducing paper.	
Simazine	MCL = 4 ug/L (or 4 parts per billion)
Simazine is an organic white solid, used as a pre-emergence herbicide used for control of broad-leaved and grassy weeds on a variety of deep-rooted crops such as artichokes, asparagus, berry crops, broad beans, citrus, etc., and on non-crop areas such as farm ponds and fish hatcheries. Its major use is on corn where it is often combined with AAtrex. Other herbicides with which simazine is combined include: paraquat, on apples, peaches; Roundup or Oust for noncrop use; Surflan on Christmas trees; Dual on corn and ornamentals.	
Toxaphene	MCL = 3 ug/L (or 3 parts per billion)
Toxaphene is an amber, waxy organic solid with a piney odor. Toxaphene was used as an insecticide for cotton and vegetables, and on livestock and poultry. These uses have been restricted, and toxaphene is now used only for special needs, mainly in southern states.	

SOC Sample Collection – Things to Remember

Sample instructions should be supplied with the sample containers from the laboratory. If the laboratory fails to include sample instructions, contact the laboratory and request sample instructions. Some general practices to remember:

- All freezer packs should be frozen for 24 hours prior to sample collection
- Samples should be collected at the entry point to the distribution system after all treatment (finished water)
- SOC sample kits will consist of several different size bottles. Some may require acid preservation immediately after sample collection. Acids can be dangerous if handled improperly. Goggles and acid-resistant gloves should be worn during the acid preservation process. Be sure to follow laboratory sample directions carefully
- A sample “blank” may accompany each sampling set (if included, the blank will already be filled with water by the laboratory and should not be opened)

- Select a sampling faucet that does NOT have an aerator (sampling must be done with minimum aeration)
- Run the water until the temperature is as cold as it gets
- Just before sample collection, adjust to a very low flow. Do not change the flow while collecting sample
- When filling sample bottle, tip bottle slightly so that water flows down the side wall of the container. Bring bottle to an upright position as it fills.
- After sample collection, cool the samples either by refrigeration or with ice.
- Call the laboratory if bottles are received broken (or break while collecting samples)
- If a sample location is out of service (for an extended period of time), notify the SOC Coordinator in writing or by phone at 217-785-0561
- The owner or operator of a water supply must maintain chemical analysis reports (results) or a summary of those reports for at least 10 years