Date

Name
Address
City, State, Zip

Dear _____:

Thank you very much for taking part in the Firefighter Occupational Exposures (FOX) Project in 2010 - 2011. As part of FOX, we are testing for more than 75 chemicals that may be in blood and urine samples from 101 Orange County Fire Authority firefighters.

Your participation in this important project is helping us learn more about chemicals in firefighters' bodies and possible environmental sources of these chemicals.

The second set of laboratory tests has been completed and your results are enclosed. This second and final mailing includes results for chemicals we tested for in your blood or urine.

This mailing includes:

Part 1: Metals in Urine – arsenic, cadmium, mercury, and manganese. For each metal, you will find a summary of your results and information about that metal.
Part 2: Pesticides in Urine and Blood – This section includes a summary of your results, a list of the pesticides we tested for, and information about these chemicals.
Part 3: Herbicides in Urine – This section includes a summary of your results, a list of the herbicides we tested for, and information about these chemicals.
Part 4: PBDEs in Blood – This section includes a summary of your results, a list of the PBDEs we tested for, and information about these chemicals.
Part 5: PCBs in Blood – This section includes a summary of your results, a list of the PCBs we tested for, and information about these chemicals.
Part 6: PAHs in Urine – This section includes a summary of your results, a list of the PAHs we tested for, and information about these chemicals.
Part 7: Phenols in Urine – This section includes a summary of your results, a list of the phenols we tested for, and information about these chemicals.
Part 8: Phthalates in Urine – This section includes a summary of your results, a list of the phthalates we tested for, and information about these chemicals.

Not Actual Results

You can compare your results to:

- Results for other firefighters who participated in the FOX Project.
- Results from a study of the general U.S. population.
- Levels of concern. If you had a result above a level of concern, you should already have heard from us about this. If needed, we provided advice on ways to reduce your exposure to protect your health. For the chemicals in this packet, levels of concern have been set only for arsenic, cadmium, and mercury. There is not enough scientific information available to set levels of concern for the other chemicals.

Thank you again for your participation in this project – you are helping us lay the foundation to measure chemicals in people throughout California. Ultimately, information from biomonitoring studies, combined with other research, can be used to learn how chemicals may affect our health and to support efforts to prevent exposure to harmful substances.

If you have any questions, please feel free to call either of us at the numbers listed below.

Sincerely,

Leslie Israel, DO, MPH
FOX Director
University of California, Irvine
Center for Occupational and Environmental Health
949-824-8685

Michael Lipsett, MD
Interim FOX Director
Biomonitoring California
California Department of Public Health
510-620-3620

Not Actual Results

BIOMONITORING CALIFORNIA
MEASURING CHEMICALS IN CALIFORNIANS

UCIRVINE

Firefighter Occupational Exposures (FOX) Project

Your Chemical Lab Results

Set 2

Samples collected in 2010-2011

This is your second and final set of results.

To maintain confidentiality, your name is not printed on this packet. You may choose to write your name here:

_____

Not Actual Results

Why are We Studying Firefighters?

Firefighters may be exposed to more toxic chemicals than the general population. During a fire or overhaul process, firefighters may inhale gases, vapors, or dust particles, and may ingest particles. Chemicals in building structures and contents can be released and new chemicals can be formed during a fire. Firefighters may also be exposed to chemicals while responding to incidents involving spills or leaks.

Only a few studies have looked at chemicals in firefighters. In the Firefighter Occupational Exposures (FOX) Project, we are measuring levels of more than 75 chemicals in firefighters. This information can be compared to levels in the general population.

Your participation in this important project helps us learn about chemical exposures in California residents. Your results are part of a larger anonymous database that includes findings from other Californians. Information from FOX and similar studies, combined with other research, can be used to learn more about how chemicals may affect health. Biomonitoring can also support government efforts to reduce exposures to harmful chemicals. By participating in FOX, you have made a valuable contribution to other firefighters and to Californians in general.

What Can Firefighters Learn from FOX?

- You will find out the levels of some chemicals in your body and how those compare to other OCFA firefighters who participated in FOX.
- You can compare chemical levels in OCFA firefighters with chemical levels in the general U.S. population.

What Can't Firefighters Learn from FOX?

For most of the chemicals that we biomonitor, there is not enough scientific information available to know how much can be in anyone's body without causing harm. Therefore, we cannot tell you whether your chemical levels might affect your health.

Can the Amount of a Chemical in a Person's Body Change over Time?

Yes. The amount of a chemical in your body depends on many factors, including how much and how often you have had contact with that chemical, and how long it takes for your body to remove it.

What are Some Ways for Firefighters to Protect Themselves from Chemical Exposures on the Job?

- Wear your personal protective equipment and follow other on-the-job procedures to protect yourself.
- Wash your hands regularly with soap and water, especially before preparing or eating food.

Not Actual Results

Part 1: **Metals** in Urine

Your Lab Result for **Arsenic**

We tested your urine for arsenic. Arsenic is found in soil and water in some areas, and in some foods. It occurs naturally and from human activity. Arsenic compounds were used extensively as pesticides and wood preservatives, but these uses have mostly been phased out. There are different forms of arsenic, some of which may cause health problems and others that are not a health concern.

Your arsenic result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with arsenic in their urine	Middle level in the U.S.	95th percentile in the U.S.	Level of Concern
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	8.8	93.1	50

Results for arsenic in urine are reported in micrograms per liter (µg/L).

Did you find arsenic in my urine?

[Yes. Your arsenic result was XX.X µg/L./No./No. We were not able to test your urine for arsenic.]

What can I compare my result to?

You can use the table above to compare your arsenic result to:

Other firefighters in this study. We found arsenic in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/L.

Middle level in the U.S. Half the adults tested in the U.S. had a result below 8.8 µg/L and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 93.1 µg/L.

The U.S. middle level and 95th percentile do not tell us anything about what level of arsenic in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

Level of concern. [Your arsenic result was below the level of concern./ Your arsenic result was below the level of concern, but somewhat higher than expected. You should already have heard from us and received advice on ways to reduce your exposure. Please consult the separate letter and table in this packet for your complete results for arsenic in urine.]

The next page explains more about arsenic.

Not Actual Results

Frequently Asked Questions about **Arsenic**

Where is arsenic found?	• Some foods, including: – Seafood*, especially shellfish. The form of arsenic in seafood is not considered to be a health concern. – Rice and foods with rice-based ingredients, such as some cereals and some infant formulas. Rice plants can take up arsenic from water or soil. – Hijiki seaweed (short, black, noodle-like seaweed). • Some drinking water sources, such as in some places in the Central Valley and Southern California. • Some pressure-treated wood used in outdoor structures, such as decks and playground equipment. Arsenic-treated wood was phased out in 2004. • Cigarette smoke. • Additive(s) put in some chicken and turkey feed to prevent parasites.
What are possible health concerns?	Some forms of arsenic: • May harm the developing fetus. • May harm the nervous system and may affect learning in children. • May contribute to cardiovascular disease and may affect lung function. • Can increase cancer risk.
What are possible ways to reduce exposure to forms of arsenic that may affect health?	• Include plenty of variety in your and your children's diets. • If you have an infant, breastfeed if you can. Include alternatives to rice-based foods in your infant's diet. • Do not burn older pressure-treated wood (manufactured before 2004) and avoid using it for home projects. • Have children wash their hands after they play on or around older wooden play structures or decks. If you own the equipment or deck, apply a sealant or coating every one to two years. • If your water comes from a private well, consider having it tested for arsenic. (If your water comes from a public water supplier, it is already tested regularly for arsenic.)

* If you ate seafood within a few days before your urine sample was collected, your result may show an elevated level of arsenic, but the form of arsenic in seafood is not considered to be a health concern.

Not Actual Results

Your Lab Result for **Cadmium**

We tested your urine for cadmium. Cadmium is a metal that is found in nature and is used in many industries and products.

Your cadmium result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with cadmium in their urine	Middle level in the U.S.	95th percentile in the U.S.	Level of Concern
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	0.23	1.1	3

Results for cadmium in urine are reported in micrograms per gram creatinine (µg/g creatinine).

Did you find cadmium in my urine?

[Yes. Your cadmium result was XX.X µg/g creatinine./No./No. We were not able to test your urine for cadmium.]

What can I compare my result to?

You can use the table above to compare your cadmium result to:

Other firefighters in this study. We found cadmium in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/g creatinine.

Middle level in the U.S. Half the adults tested in the U.S. had a result below 0.23 µg/g creatinine and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 1.1 µg/g creatinine.

The U.S. middle level and 95th percentile do not tell us anything about what level of cadmium in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

Level of concern. [Your cadmium result was below the level of concern./Your cadmium result was above the level of concern. You should already have heard from us and received advice on ways to reduce your exposure.]

The next page explains more about cadmium.

Not Actual Results

Frequently Asked Questions about **Cadmium**

Where is cadmium found?	• Cigarette and other tobacco smoke. • Some cheap metal jewelry, including some charms. • Rechargeable batteries labeled NiCd or NiCad. • Metal plating and solder. • Some red, yellow, and orange decorative paints, which may be used on glassware and pottery.
What are possible health concerns?	Cadmium: • Can affect brain development in young children. • Can damage the lungs and kidneys. • Can increase lung cancer risk. • Can weaken bones.
What are possible ways to reduce exposure?	• Do not smoke or let children breathe cigarette or other tobacco smoke. • Do not let children wear or play with cheap metal jewelry or charms. • Do not let children handle rechargeable batteries labeled NiCd or NiCad. • Properly recycle batteries (see below). • If you do any welding or metalworking, be sure that your work area is well ventilated and use proper protective equipment. • Keep children away from welding fumes and other metal vapors and dusts.

For More Information

Cadmium fact sheets:

www.oehha.ca.gov/public_info/facts/cd_facts.html

www.atsdr.cdc.gov/tfacts5.pdf

For battery recycling: Visit www.1800recycling.com, enter your zip code, choose “Electronics”, and check box for “Batteries (Rechargeable)”; or call 1-(800) CLEANUP (253-2687).

For concerns about cadmium in consumer products, call the Consumer Product Safety Commission hotline: 1-800-638-2772

Not Actual Results

Your Lab Result for **Mercury**

We tested your urine for mercury. Mercury is a metal found in nature. It gets into the environment from coal burning, other industries, and abandoned gold mines. Mercury builds up in certain types of fish.

Your mercury result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with mercury in their urine	Middle level in the U.S.	95th percentile in the U.S.	Level of Concern
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	0.45	2.5	20

Results for mercury in urine are reported in micrograms per liter (µg/L).

Did you find mercury in my urine?

[Yes. Your mercury result was XX.X µg/L./No./No. We were not able to test your urine for mercury.]

What can I compare my result to?

You can use the table above to compare your mercury result to:

Other firefighters in this study. We found mercury in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/L.

Middle level in the U.S. Half the adults tested in the U.S. had a result below 0.45 µg/L and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 2.5 µg/L .

The U.S. middle level and 95th percentile do not tell us anything about what level of mercury in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

Level of concern. [Your mercury result was below the level of concern./Your mercury result was above the level of concern. You should already have heard from us and received advice on ways to reduce your exposure.]

The next page explains more about mercury.

Not Actual Results

Frequently Asked Questions about **Mercury**

Where is mercury found?	• Certain types of fish and seafood – this is the most common source of exposure to mercury. • Some imported face creams used for skin lightening, anti-aging, or acne. • Silver-colored dental fillings. • Glass thermometers, older barometers, and blood pressure gauges. • Fluorescent lights, including compact fluorescent light (CFL) bulbs.
What are possible health concerns?	Mercury: • Can affect brain development and cause learning and behavior problems in infants and children who were exposed in the womb. • Can harm the nervous system and kidneys. • May affect the heart.
What are possible ways to reduce exposure?	• Choose fish that are lower in mercury, such as salmon, tilapia, trout, canned light tuna, sardines, anchovies, and oysters. • Avoid fish that are high in mercury, such as shark, swordfish, orange roughy, bluefin, and bigeye tuna. • Do not use imported skin-lightening, acne treatment, or anti-aging creams unless you are certain that they do not contain mercury. • Properly clean up broken thermometers, CFL bulbs, and other items containing mercury (see below). Do not let children play with silver liquid from items like mercury thermometers.

For More Information

Guide for choosing fish that are lower in mercury: www.oehha.ca.gov/fish/pdf/2011CommFishGuide_color.pdf

Advice on mercury in fish that you catch: www.oehha.ca.gov/fish/hg/index.html or call (510) 622-3170

Concerns about mercury exposure — contact the California Poison Control System hotline: www.calpoison.org/home.html or 1-800-222-1222

Cleaning up mercury spills, such as from broken thermometers or CFL bulbs: www.epa.gov/mercury/spills/

Not Actual Results

Your Lab Result for **Manganese**

We tested your urine for manganese, an essential nutrient. **It is normal and healthy to have some manganese in your body and your urine.** Manganese is also a metal that can be toxic at high levels. The most common way to be exposed to excess manganese is through jobs that involve working with metals, such as welding.

Your manganese result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with manganese in their urine	Middle level in the U.S.	95th percentile in the U.S.
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	Not available	Not available

Results for manganese in urine are reported in micrograms per liter (µg/L).

Did you find manganese in my urine?

[Yes. Your manganese result was XX.X µg/L./No./No. We were not able to test your urine for manganese.]

What can I compare my result to?

You can use the table above to compare your manganese result to:

Other firefighters in this study. We found manganese in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/L.

Middle level in the U.S. The middle level in the U.S. is not yet known.

95th percentile in the U.S. The 95th percentile in the U.S. is not yet known.

No state or federal agency has established a level of concern for manganese. It is normal and healthy to have some manganese in your body and your urine. The next page explains more about manganese.

Not Actual Results

Frequently Asked Questions about **Manganese**

Manganese is an essential nutrient that we get mainly from food. It is also a metal used in many industries and products. The most common way to be exposed to excess manganese is through jobs that involve working with metals, such as welding.

Where is manganese found?	• Certain foods, such as nuts, grains, beans, and leafy green vegetables. • Some drinking water sources. • Certain metal alloys, such as steel. • Some welding rods. • Certain chemicals used in agriculture to kill fungus.
Does my body need manganese?	• Some manganese is needed to support many vital processes in the body, such as building bones and healing wounds.
What are possible health concerns of too much manganese?	Too much manganese: • May be associated with learning and behavior problems in children. • Can harm memory, thinking, mood, and balance in adults.
How can I maintain a healthy level of manganese?	• Eat a well-balanced diet with adequate iron. • If you do any welding or metalworking, be sure that your work area is well ventilated and use proper protective equipment. • Keep children away from welding fumes and other metal vapors and dusts.

For More Information

Manganese fact sheet: www.atsdr.cdc.gov/tfacts151.pdf

Not Actual Results

Part 2: **Pesticides** in Urine and Blood

We tested for two types of pesticides in urine and one type of pesticide in blood.

In urine, we tested for:

Organophosphate Pesticides

Pyrethroid Pesticides

In blood, we tested for:

Organochlorine Pesticides

This chapter gives you your results and more information about pesticides.

Not Actual Results

List of Pesticides Tested

This list tells you more about the pesticides shown on your results pages.

Kind of pesticide	Chemical we tested	Examples of pesticide(s) you may have been exposed to
Organophosphate Pesticides	**TCPy** (3,5,6-Trichloro-2-pyridinol)	Chlorpyrifos
	IMPY (2-Isopropyl-4-methyl-6-hydroxypyrimidine)	Diazinon
Pyrethroid Pesticides	**3-PBA** (3-Phenoxybenzoic acid)	Cyhalothrin, cypermethrin, deltamethrin, fenpropathrin, permethrin, and/or tralomethrin
	4F-3-PBA (4-Fluoro-3-phenoxybenzoic acid)	Cyfluthrin
Organochlorine Pesticides	**OC** (Oxychlordane) **TN** (trans-Nonachlor)	Chlordane
	DDT (p,p'-DDT, o,p'-DDT) **DDE** (p,p'-DDE)	DDT or DDE
	Hexachlorobenzene	Hexachlorobenzene
	beta-Hexachlorocyclohexane	beta-Hexachlorocyclohexane

Not Actual Results

Your Lab Results for **Organophosphate Pesticides**

We tested your urine for organophosphate pesticides. Organophosphate pesticides are used in commercial agriculture to control pests on fruit and vegetable crops. They are also used in home gardens, for flea control on pets, and in some no-pest strips. In the past, organophosphate pesticides were widely used inside homes to control pests like termites and ants, but these uses have been discontinued.

Did you find organophosphate pesticides in my urine?

[Yes. We found 2 chemicals in your urine that show you were exposed to organophosphate pesticides.]

What can I compare my results to?

You can use the table in this packet to compare your results for these chemicals to:

Other firefighters in this study. We found these chemicals in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle levels and 95th percentiles do not tell us anything about what levels of these chemicals in urine might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any of these chemicals. Scientists are still studying how these chemicals might affect health. The next page contains a table with your organophosphate pesticide results, followed by a page that explains more about organophosphate pesticides.

Not Actual Results

Your Lab Results for **Organophosphate Pesticides**

Chemical Measured	Your Result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this chemical in their urine	Middle level in the U.S.	95th percentile in the U.S.	Pesticide(s) you were exposed to
TCPy	[XX.X]	xx.x	yy.y	X of 101	1.9	10.9	Chlorpyrifos
IMPY	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available	Diazinon

Results for pesticides in urine are reported in micrograms per liter (µg/L).

Not Actual Results

Frequently Asked Questions about **Organophosphate Pesticides**

Where are organophosphate pesticides found?	• Some flea and tick collars, shampoos, sprays, and powders for dogs and cats. • Some garden pest control products and no-pest strips. • Some fruits and vegetables. Small amounts of organophosphate pesticides found in these foods come from agricultural pesticide use. • Air and dust in areas where organophosphate pesticides are used, such as some farms or home gardens. • Some treatments for head lice.
What are possible health concerns?	Some organophosphate pesticides: • May affect the nervous system. • May harm the developing fetus, possibly affecting later learning and behavior.
What are possible ways to reduce exposure?	• Use pesticide-free methods for pest prevention in your home and garden. If you choose to use pesticides, consider baits and traps instead of sprays. Always follow directions for use, storage, and disposal. • To help control fleas without pesticides, comb pets with a flea comb, regularly bathe pets with pesticide-free shampoo, and wash pet bedding. • If a pesticide is needed for flea control, consider safer spot-on treatments or oral medications for your pet. Ask your veterinarian about the safest choices. • Wash all fruits and vegetables before eating them. • Consider choosing organic or pesticide-free fruits and vegetables. • Because pesticides can be in dust, wash your hands often, especially before eating or preparing food, clean your floors regularly, and use a damp cloth to dust.

For More Information

Tips for pest prevention: www.cdpr.ca.gov/docs/dept/factshts/pull2.pdf

Find local disposal site for pesticides: Visit www.1800recycling.com, enter your zip code, choose “Hazardous”, and check box for “Pesticides”; or call 1-800-CLEANUP (253-2687).

Not Actual Results

Your Lab Results for **Pyrethroid Pesticides**

We tested your urine for pyrethroid pesticides. Pyrethroid pesticides are common ingredients in pest control products for the home and garden. They are also used to control insects on commercial agricultural crops and livestock.

Did you find pyrethroid pesticides in my urine?

[Yes. We found 2 chemicals in your urine that show you were exposed to at least one pyrethroid pesticide.]

What can I compare my results to?

You can use the table in this packet to compare your results for these chemicals to:

Other firefighters in this study. We found these chemicals in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle level and 95th percentile do not tell us anything about what levels of these chemicals in urine might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any of these chemicals. Scientists are still studying how these chemicals might affect health. The next page contains a table with your pyrethroid pesticide results, followed by a page that explains more about pyrethroid pesticides.

Not Actual Results

Your Lab Results for **Pyrethroid Pesticides**

Chemical Measured	Your Result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this chemical in their urine	Middle level in the U.S.	95th percentile in the U.S.	Examples of pesticide(s) you may have been exposed to
3-PBA	[XX.X]	xx.x	yy.y	X of 101	0.27	3.3	Cyhalothrin, cypermethrin, deltamethrin, fenpropathrin, permethrin, and/or tralomethrin
4F-3-PBA	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available	Cyfluthrin

Results for pesticides in urine are reported in micrograms per liter (µg/L).

Not Actual Results

Frequently Asked Questions about **Pyrethroid Pesticides**

Where are pyrethroid pesticides found?	• Home and garden pest control products such as roach, ant, fly, and mosquito sprays, traps, and repellents; and termite and flea foggers and bombs. • Some tick and flea control products, such as collars and spot-on treatments. • Commercial pesticide products used on crops and livestock and for pest control in buildings and landscape maintenance. Small amounts of pyrethroid pesticides used in agriculture may be found in some foods. • Air and dust in areas where pyrethroid pesticides are used, such as homes, gardens, and some farms. • Some treatments for head lice.
What are possible health concerns?	Some pyrethroid pesticides: • May affect the developing fetus and child, possibly leading to changes in behavior. • May interfere with the body's natural hormones and may decrease fertility.
What are possible ways to reduce exposure?	• Use pesticide-free methods for pest prevention. If you choose to use pesticides, consider baits and traps instead of sprays. Always follow directions for use, storage, and disposal. • To help control fleas without pesticides, comb pets with a flea comb, regularly bathe pets with pesticide-free shampoo, and wash pet bedding. • If a pesticide is needed for flea control, consider safer spot-on treatments or oral medications for your pet. Ask your veterinarian about the safest choices. • Wash all fruits and vegetables before eating them. • Because pesticides can be in dust, wash your hands often, especially before eating or preparing food, clean your floors regularly, and use a damp cloth to dust.

For More Information

Tips for pest prevention: www.cdpr.ca.gov/docs/dept/factshts/pull2.pdf

Find local disposal site for pesticides: Visit www.1800recycling.com, enter your zip code, choose "Hazardous", and check box for "Pesticides"; or call 1-800-CLEANUP (253-2687).

Not Actual Results

Your Lab Results for **Organochlorine Pesticides**

We tested your blood for organochlorine pesticides. Organochlorine pesticides were once widely used in agriculture and for home pest control. Most organochlorine pesticides, including all those measured in this study, are no longer used in the U.S. These pesticides have spread through the environment and take a long time to break down.

Did you find organochlorine pesticides in my blood?

[Yes. We found 5 chemicals in your blood that show you were exposed to organochlorine pesticides.]

What can I compare my results to?

You can use the table in this packet to compare your results for these chemicals to:

Other firefighters in this study. We found some of these chemicals in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle levels and 95th percentiles do not tell us anything about what levels of these chemicals in blood might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any of these chemicals. Scientists are still studying how these chemicals might affect health. The next page contains a table with your organochlorine pesticide results, followed by a page that explains more about organochlorine pesticides.

Not Actual Results

Your Lab Results for **Organochlorine Pesticides**

Chemical Measured	Your Result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this chemical in their blood	Middle level in the U.S.	95th percentile in the U.S.	Pesticide(s) you were exposed to
OC	[XX.X]	xx.x	yy.y	X of 101	11.4	39.2	Chlordane
TN	[XX.X]	xx.x	yy.y	X of 101	17.3	74.7	Chlordane
DDT (p,p'-DDT)	[XX.X]	xx.x	yy.y	X of 101	Not available	20.7	p,p'-DDT
DDT (o,p'-DDT)	[Not found]	xx.x	yy.y	X of 101	Not available	Not available	o,p'-DDT
DDE	[XX.X]	xx.x	yy.y	X of 101	233	1,990	DDT or DDE
Hexachlorobenzene	[XX.X]	xx.x	yy.y	X of 101	15.1	29.0	Hexachlorobenzene
beta-Hexachloro-cyclohexane	[Not found]	xx.x	yy.y	X of 101	Not available	62.2	beta-Hexachloro-cyclohexane

Results for pesticides in blood are reported in nanograms per gram lipid (ng/g lipid).

Not Actual Results

Frequently Asked Questions about **Organochlorine Pesticides**

Where are organochlorine pesticides found?	• Some high-fat dairy products, such as butter and high-fat cheeses like cream cheese and American cheese. • Some high-fat meats, such as some ground beef. • Some fatty fish, such as catfish, salmon, and canned sardines.
What are possible health concerns?	Organochlorine pesticides: • May affect the developing fetus, possibly leading to later changes in learning and behavior. • May interfere with the body's natural hormones. • May have effects on reproduction, such as decreased fertility. • May increase cancer risk.
What are possible ways to reduce exposure?	Organochlorine pesticides have been decreasing in the environment and food because they are no longer used in the U.S. You might further reduce your exposure by: • Including plenty of variety in your diet. • Trimming off fat from meat and cooking it on a rack to let fat drain off. • Washing your hands often, especially before eating or preparing food, cleaning your floors regularly, and dusting with a damp cloth. This is because organochlorine pesticides may be in dust and soil from past use.
Importance of eating fish	Fatty fish should be part of a healthy diet, even though they may contain some organochlorine pesticides. These fish are an excellent source of healthy fats (like "omega-3" fatty acids) and protein.

For More Information

Information on DDT, an organochlorine pesticide, in fish: www.oehha.ca.gov/fish/chems/ddtfacts.html

Not Actual Results

Part 3: **Herbicides** in Urine

Your Lab Result for **2,4-Dichlorophenoxyacetic Acid (2,4-D)**

We tested your urine for 2,4-dichlorophenoxyacetic acid (2,4-D). 2,4-D is widely used to control weeds in agriculture, recreational areas, lawns and gardens, and along roadsides and railroad tracks.

Your 2,4-D result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with 2,4-D in their urine	Middle level in the U.S.	95th percentile in the U.S.
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	0.22	1.6

Results for 2,4-D in urine are reported in micrograms per liter (µg/L).

Did you find 2,4-D in my urine?

[Yes. Your 2,4-D result was XX.X µg/L./No./No. We were not able to test your urine for 2,4-D.]

What can I compare my result to?

You can use the table above to compare your 2,4-D result to:

Other firefighters in this study. We found 2,4-D in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/L.

Middle level in the U.S. Half the adults tested in the U.S. had a result below 0.22 µg/L and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 1.6 µg/L.

The U.S. middle level and 95th percentile do not tell us anything about what level of 2,4-D in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

No state or federal agency has established a level of concern for 2,4-D. Scientists are still studying how 2,4-D might affect health. The next page explains more about 2,4-D.

Not Actual Results

Frequently Asked Questions about **2,4-Dichlorophenoxyacetic Acid (2,4-D)**

Where is 2,4-D found?	• Some home lawn products labeled as weed killers and for "weed and feed" use. • Commercial weed control products used along roadsides and railroad tracks, and in recreational areas such as golf courses, athletic fields, and parks. • Some herbicides for crops such as wheat, almonds, and some citrus and stone fruits.
What are possible health concerns?	Scientists are still studying how 2,4-D might affect people's health. There is concern that 2,4-D: • May interfere with the body's natural hormones. • May harm the developing fetus. • May increase cancer risk.
What are possible ways to reduce exposure?	• Use non-chemical methods to control weeds, such as regular mowing and hand-weeding. • If you choose to use a weed killer, spot-treat problem areas and follow warning statements on the label. After application: – Remove shoes before entering your house; remove clothes that are soiled during application and launder them separately. – Limit access to 2,4-D treated areas, at least until the product has completely dried; for children and pets, limit access for one to two days or longer if possible. • Look for posted notices that indicate an area (such as a park or athletic field) has been treated with a weed killer and follow any precautions on the notice.

For More Information

Tips for healthy lawn care: www.cdpr.ca.gov/docs/dept/factshts/lawn15.pdf

Find local disposal site for pesticides: Visit www.1800recycling.com, enter your zip code, choose "Hazardous", and check box for "Pesticides"; or call 1-800-CLEANUP (1-800-253-2687)

Not Actual Results

Your Lab Result for **2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)**

We tested your urine for 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). 2,4,5-T was used in the past to control weeds in forests, parks, pastures, lawns, and along roadsides and railroad tracks. Because of toxicity concerns, most uses were ended in the U.S. in the 1970s. All uses of 2,4,5-T in the U.S. ended by 1985. Biomonitoring California tests for 2,4,5-T only because it is included in a laboratory method that measures a group of similar chemicals. We do not expect to find 2,4,5-T in people's urine.

Your 2,4,5-T result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with 2,4,5-T in their urine	Middle level in the U.S.	95th percentile in the U.S.
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	Not available	0.16

Results for 2,4,5-T in urine are reported in micrograms per liter (µg/L).

Did you find 2,4,5-T in my urine?

[Yes. Your 2,4,5-T result was XX.X µg/L./No./No. We were not able to test your urine for 2,4,5-T.]

What can I compare my result to?

You can use the table above to compare your 2,4,5-T result to:

Other firefighters in this study. We found 2,4,5-T in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. The middle level in the U.S. cannot be calculated because 2,4,5-T was not found in enough people.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 0.16 µg/L.

The U.S. middle level and 95th percentile do not tell us anything about what level of 2,4,5-T in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

No state or federal agency has established a level of concern for 2,4,5-T. The next page explains more about 2,4,5-T.

Not Actual Results

Frequently Asked Questions about **2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)**

Where was 2,4,5-T found?	Weed control products used in the past in forests, parks, pastures, lawns and along roadsides and railroad tracks. All uses of 2,4,5-T in the U.S. ended by 1985.
What are possible health concerns?	Weed control products that contained 2,4,5-T were contaminated with dioxin, a toxic chemical known to cause cancer and harm the developing fetus. Use of these weed control products ended because of toxicity concerns, but it is not known whether 2,4,5-T itself posed health concerns or if toxicity was due to dioxin alone.
What are possible ways to reduce exposure?	No actions are suggested because 2,4,5-T is no longer used and does not last a long time in the environment.

For More Information

To find out about past use of 2,4,5-T as an ingredient in Agent Orange, an herbicide used by the U.S. military in Vietnam, visit: www.publichealth.va.gov/exposures/agentorange/basics.asp

Not Actual Results

Part 4: **PBDEs** in Blood

Your Lab Results for **Polybrominated Diphenyl Ethers (PBDEs)**

We tested your blood for 19 PBDEs. PBDE flame retardants were commonly added to furniture, infant products, and electronics for many years. They have spread through the environment and break down slowly. U.S. production of some widely used PBDEs ended as of 2006, and the last major PBDE mixture is due to be phased out by the end of 2013.

Did you find PBDEs in my blood?

[Yes. We found 12 PBDEs in your blood.]

What can I compare my results to?

You can use the table in this packet to compare each PBDE result to:

Other firefighters in this study. We found PBDEs in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle levels and 95th percentiles do not tell us anything about what levels of PBDEs in blood might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any PBDE. Scientists are still studying how PBDEs might affect health. The next page contains a table with your PBDE results, followed by a page that explains more about PBDEs.

Not Actual Results

Your Lab Results for **PBDEs**

PBDE measured	Your result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this PBDE in their blood	Middle level in the U.S.	95th percentile in the U.S.
BDE 17	[Not found]	xx.x	yy.y	X of 101	Not available	Not available
BDE 28	[XX.X]	xx.x	yy.y	X of 101	1.1	8.2
BDE 47	[XX.X]	xx.x	yy.y	X of 101	18.0	163
BDE 66	[Not found]	xx.x	yy.y	X of 101	Not available	Not available
BDE 85	[XX.X]	xx.x	yy.y	X of 101	Not available	4.1
BDE 99	[XX.X]	xx.x	yy.y	X of 101	Not available	41.6
BDE 100	[XX.X]	xx.x	yy.y	X of 101	3.3	36.6
BDE 153	[XX.X]	xx.x	yy.y	X of 101	4.4	73.3
BDE 154	[XX.X]	xx.x	yy.y	X of 101	Not available	4.2
BDE 183	[Not found]	xx.x	yy.y	X of 101	Not available	Not available
BDE 196	[Not found]	xx.x	yy.y	X of 101	Not available	Not available
BDE 197	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available
BDE 201	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available
BDE 202	[Not found]	xx.x	yy.y	X of 101	Not available	Not available
BDE 203	[Not found]	xx.x	yy.y	X of 101	Not available	Not available
BDE 206	[Not found]	xx.x	yy.y	X of 101	Not available	Not available
BDE 207	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available
BDE 208	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available
BDE 209	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available

Results for PBDEs in blood are reported in nanograms per gram lipid (ng/g lipid).

Not Actual Results

Frequently Asked Questions about **Polybrominated Diphenyl Ethers (PBDEs)**

Where are PBDEs found?

- Polyurethane foam in furniture, pillows, motor vehicle seats, and baby products, like car seats and changing table pads, especially if manufactured before 2006.
- Some hard plastic casings for electronics, such as TVs and computers; some mattresses, upholstery fabric, draperies, wires, and cables, especially if manufactured before 2013.
- Some carpet padding made from recycled or scrap polyurethane foam.
- Dust in homes, offices, and cars that contain products made with PBDEs.
- Some high-fat foods, like sausages, high-fat cheeses, butter, and fatty fish.

What are possible health concerns?

PBDEs:

- May interfere with the body's natural hormones.
- May harm the developing fetus and infant, possibly affecting later learning and behavior.
- May decrease fertility.

What are possible ways to reduce exposure?

Reducing exposure to PBDEs is difficult because they have been extensively used in furniture and other products. Actions that may help reduce exposure are listed below.

- Because PBDEs come out of products and collect in dust:
  - Wash your hands often, especially before eating or preparing food.
  - Wash your children's hands often. Infants and toddlers get a lot of dust on their hands when they play or crawl on the floor.
  - Clean your floors regularly and use a damp cloth to dust.
- Replace upholstered furniture that is torn or has crumbling foam.
- Avoid using carpet padding made from recycled or scrap polyurethane foam.
- Include plenty of variety in your diet.

Not Actual Results

Part 5: **PCBs** in Blood

Your Lab Results for **Polychlorinated Biphenyls (PCBs)**

We tested your blood for 15 PCBs. PCBs were once widely used to insulate electrical equipment and as plasticizers. PCBs were banned in the late 1970s but are still in some old equipment and products. They have spread through the environment and take a long time to break down.

Did you find PCBs in my blood?

[Yes. We found 14 PCBs in your blood.]

What can I compare my results to?

You can use the table in this packet to compare each PCB result to:

Other firefighters in this study. We found PCBs in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle levels and 95th percentiles do not tell us anything about what levels of PCBs in blood might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any PCB. Scientists are still studying how PCBs might affect health. The next page contains a table with your PCB results, followed by a page that explains more about PCBs.

Not Actual Results

Your Lab Results for **PCBs**

PCB measured	Your result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this PCB in their blood	Middle level in the U.S.	95th percentile in the U.S.
PCB66	[XX.X]	xx.x	yy.y	X of 101	1.4	4.2
PCB74	[XX.X]	xx.x	yy.y	X of 101	5.0	24.1
PCB99	[XX.X]	xx.x	yy.y	X of 101	4.1	18.6
PCB101	[XX.X]	xx.x	yy.y	X of 101	1.7	5.5
PCB105	[Not found]	xx.x	yy.y	X of 101	1.2	6.8
PCB118	[XX.X]	xx.x	yy.y	X of 101	5.7	34.3
PCB138	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available
PCB153	[XX.X]	xx.x	yy.y	X of 101	24.2	101
PCB156	[XX.X]	xx.x	yy.y	X of 101	4.1	16.8
PCB170	[XX.X]	xx.x	yy.y	X of 101	7.8	29.5
PCB180	[XX.X]	xx.x	yy.y	X of 101	21.5	88.0
PCB183	[XX.X]	xx.x	yy.y	X of 101	1.9	8.4
PCB187	[XX.X]	xx.x	yy.y	X of 101	5.7	25.9
PCB194	[XX.X]	xx.x	yy.y	X of 101	5.0	20.1
PCB203	[XX.X]	xx.x	yy.y	X of 101	Not available	Not available

Results for PCBs in blood are reported in nanograms per gram lipid (ng/g lipid).

Not Actual Results

Frequently Asked Questions about **Polychlorinated Biphenyls (PCBs)**

Where are PCBs found?	• Some fatty fish like salmon and canned sardines. • Some high-fat animal products like hamburger meat and ice cream. • Some products and building materials produced before 1980, such as: – Caulk in older buildings, including schools. – Some old fluorescent light fixtures. – Some paint, wood floor finishes, plastics, and foam or fiberglass insulation.
What are possible health concerns?	PCBs: • Can harm the developing fetus and infant, possibly affecting growth and learning. • Can interfere with the body's natural hormones and affect the immune system. • May decrease fertility. • May increase cancer risk.
What are possible ways to reduce exposure?	PCBs have been decreasing in the environment and food because they are no longer manufactured. You might further reduce your exposure by: • Including plenty of variety in your diet. • Trimming off fat from meat and cooking it on a rack to let fat drain off. • Washing your hands often, especially before eating or preparing food, cleaning your floors regularly, and dusting with a damp cloth. This is because PCBs may be in dust and soil.
Importance of eating fish	Fatty fish should be part of a healthy diet, even though they may contain some PCBs. These fish are an excellent source of healthy fats (like "omega-3" fatty acids) and protein.

For More Information

PCBs in fish: www.oehha.ca.gov/fish/so_cal/index.html

PCBs in old caulk: www.epa.gov/pcbsincaulk/caulkexposure.htm

PCBs in old fluorescent lighting: www.epa.gov/wastes/hazard/tsd/pcbs/pubs/ballasts.htm

Not Actual Results

Part 6: **PAHs** in Urine

Your Lab Results for **Polycyclic Aromatic Hydrocarbons (PAHs)**

We tested your urine for PAHs. PAHs are found in smoke from structural, vehicle, and wildland fires, as well as in tobacco smoke. PAHs occur naturally in petroleum products, such as gasoline and diesel, and are formed when these products are burned. They also form when foods are grilled, barbecued, or roasted.

Did you find PAHs in my urine?

[Yes. We found 8 chemicals in your urine that show you were exposed to PAHs.]

What can I compare my results to?

You can use the table in this packet to compare each PAH result to:

Other firefighters in this study. We found PAHs in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle levels and 95th percentiles do not tell us anything about what levels of PAHs in urine might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any PAH. Scientists are still studying how PAHs might affect health. The next page contains a table with your PAH results, followed by a page that explains more about PAHs.

Not Actual Results

Your Lab Results for **PAHs**

Chemical measured	Your result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this PAH in their urine	Middle level in the U.S.	95th percentile in the U.S.	PAH you were exposed to
2-Hydroxyfluorene	[XX.X]	xx.x	yy.y	X of 101	0.27	2.7	Fluorene
3-Hydroxyfluorene	[Not found]	xx.x	yy.y	X of 101	0.09	1.6	Fluorene
9-Hydroxyfluorene	[XX.X]	xx.x	yy.y	X of 101	0.35	2.2	Fluorene
1-Hydroxynaphthalene	[XX.X]	xx.x	yy.y	X of 101	2.3	33.0	Naphthalene
2-Hydroxynaphthalene	[XX.X]	xx.x	yy.y	X of 101	3.7	28.6	Naphthalene
1-Hydroxyphenanthrene	[XX.X]	xx.x	yy.y	X of 101	0.14	0.73	Phenanthrene
2-Hydroxyphenanthrene	[XX.X]	xx.x	yy.y	X of 101	0.07	0.33	Phenanthrene
3-Hydroxyphenanthrene	[XX.X]	xx.x	yy.y	X of 101	0.10	0.54	Phenanthrene
1-Hydroxypyrene	[XX.X]	xx.x	yy.y	X of 101	0.11	0.72	Pyrene

Results for PAHs in urine are reported in micrograms per liter (µg/L).

Not Actual Results

Frequently Asked Questions about **Polycyclic Aromatic Hydrocarbons (PAHs)**

Where are PAHs found?	• Exhaust from cars, trucks, and buses, as well as road dust. • Cigarette smoke, smoke from cigars and pipes, and chewing tobacco. • Smoke from grilling, fireplaces, wood stoves, campfires, and forest fires. • Foods that are grilled, barbecued, smoked, fried, or roasted. • Liquid smoke seasonings and flavorings.
What are possible health concerns?	Some PAHs: • May contribute to asthma, bronchitis, and other respiratory problems. • May affect the developing fetus, including effects on growth. • May reduce fertility and interfere with the body's natural hormones. • May increase cancer risk.
What are possible ways to reduce exposure?	• Limit consumption of grilled, barbecued, smoked, fried, and roasted foods. Avoid burning food. Try steaming, boiling, stewing, or poaching your food more often. • Take steps to reduce exposure to common sources of air pollution: – Do not smoke or allow others to smoke in your home or car. Avoid breathing cigarette or other tobacco smoke. – Use exhaust fans or open your windows when cooking indoors. – Do not idle cars inside garages, especially garages attached to your home. – Avoid burning wood, especially for home heating. • Because PAHs can be in dust, wash your hands often, especially before eating or preparing food, clean your floors regularly, and use a damp cloth to dust.

For More Information

Fact sheet on PAHs: www.atsdr.cdc.gov/tfacts69.pdf

Not Actual Results

Part 7: **Phenols** in Urine

Your Lab Result for **Benzophenone-3**

We tested your urine for benzophenone-3. Benzophenone-3 (oxybenzone) is used in many sunscreens and some other personal care products to protect skin from sun damage. Benzophenone-3 is also added to packaging and some consumer products, such as cosmetics and paints, to protect the products from sun damage.

Your benzophenone-3 result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with benzophenone-3 in their urine	Middle level in the U.S.	95th percentile in the U.S.
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	16.5	1,890

Results for benzophenone-3 in urine are reported in micrograms per liter (µg/L).

Did you find benzophenone-3 in my urine?

[Yes. Your benzophenone-3 result was XX.X µg/L./No./No. We were not able to test your urine for benzophenone-3.]

What can I compare my result to?

You can use the table above to compare your benzophenone-3 result to:

Other firefighters in this study. We found benzophenone-3 in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/L.

Middle level in the U.S. Half the adults tested in the U.S. had a result below 16.5 µg/L and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 1,890 µg/L.

The U.S. middle level and 95th percentile do not tell us anything about what level of benzophenone-3 in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

No state or federal agency has established a level of concern for benzophenone-3. Scientists are still studying how benzophenone-3 might affect health. The next page explains more about benzophenone-3.

Not Actual Results

Frequently Asked Questions about **Benzophenone-3 (Oxybenzone)**

Where is benzophenone-3 found?	• Many sunscreens. • Sun-protective personal care products, such as some lotions, lip balms, and cosmetics. • Some perfumes, shampoos, conditioners, and nail polish. • Plastic packaging for some food and consumer products. • Some protective coatings, such as varnish and oil-based paint.
What are possible health concerns?	Scientists are still studying how benzophenone-3 may affect people's health. There is concern that benzophenone-3: • May interfere with the body's natural hormones.
What are possible ways to reduce exposure?	• Wash off sunscreen and sun-protective products once you are out of the sun. • Eat more fresh food and less packaged food, which might help reduce exposure to benzophenone-3 from some plastic packaging.
Importance of sun safety	Sun exposure is known to damage skin and increase skin cancer risk. Applying a broad-spectrum sunscreen is only one of the important ways to shield against the sun's ultraviolet (UV) rays. You should also: • Reduce or avoid exposure to direct sunlight when UV rays are strongest, usually between 10 am and 4 pm. When possible, seek shade. • Wear protective clothing, including a wide-brimmed hat and sunglasses.

For More Information

Sun safety tips: www.healthychildren.org/English/safety-prevention/at-play/Pages/Sun-Safety.aspx

Not Actual Results

Your Lab Result for **Bisphenol A (BPA)**

We tested your urine for bisphenol A (BPA). BPA is used to make protective coatings, like the linings in metal food cans that prevent rust and corrosion. Some receipts may contain BPA, including receipts from cash registers, ATMs, or gas pumps. BPA is also used to make a hard plastic called polycarbonate.

Your BPA result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with BPA in their urine	Middle level in the U.S.	95th percentile in the U.S.
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	1.8	9.6

Results for BPA in urine are reported in micrograms per liter (µg/L).

Did you find BPA in my urine?

[Yes. Your BPA result was XX.X µg/L./No./No. We were not able to test your urine for BPA.]

What can I compare my result to?

You can use the table above to compare your BPA result to:

Other firefighters in this study. We found BPA in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/L.

Middle level in the U.S. Half the adults tested in the U.S. had a result below 1.8 µg/L and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 9.6 µg/L.

The U.S. middle level and 95th percentile do not tell us anything about what level of BPA in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

No state or federal agency has established a level of concern for BPA. Scientists are still studying how BPA might affect health. The next page explains more about BPA.

Not Actual Results

Frequently Asked Questions about **Bisphenol A (BPA)**

Where is BPA found?	• The coatings inside some food and drink cans. • Some hard plastic food and drink containers, which might be labeled with the number "7" or "PC" on the bottom. • Some older plastic baby bottles and sippy cups, especially if manufactured before July 2012. • Some plastic stretch wrap used to cover or package food. • Some cash register receipts.
What are possible health concerns?	There is concern that BPA: • May affect the fetus and infant, including possible changes in development and behavior. • May affect hormone function. • May affect reproductive function. • Might increase cancer risk.
What are possible ways to reduce exposure?	• Eat more fresh food and less canned food. • Use glass or stainless steel containers to store food and liquids. • Avoid using plastic containers for hot food or drinks. Avoid microwaving plastic containers. • If you have an infant, breastfeed if you can. For bottle-feeding, use glass bottles. • Wash hands before eating, because things you touch can have BPA in them.

For More Information

BPA fact sheet for parents: www.hhs.gov/safety/bpa/

Not Actual Results

Your Lab Results for **Parabens**

We tested your urine for parabens. Parabens are widely used as preservatives in personal care products, such as cosmetics, lotions, shampoos, and conditioners. Parabens are also used as preservatives in some over-the-counter and prescription medications.

Did you find parabens in my urine?

[Yes. We found 4 parabens in your urine.]

What can I compare my results to?

You can use the table in this packet to compare each paraben result to:

Other firefighters in this study. We found some parabens in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle levels and 95th percentiles do not tell us anything about what levels of parabens in urine might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any paraben. Scientists are still studying how parabens might affect health. The next page contains a table with your paraben results, followed by a page that explains more about parabens.

Not Actual Results

Your Lab Results for **Parabens**

Paraben measured	Your result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this paraben in their urine	Middle level in the U.S.	95th percentile in the U.S.
Butyl paraben	[XX.X]	xx.x	yy.y	X of 101	Not available	18.7
Ethyl paraben	[XX.X]	xx.x	yy.y	X of 101	1.3	91.4
Methyl paraben	[XX.X]	xx.x	yy.y	X of 101	59.1	1,010
Propyl paraben	[XX.X]	xx.x	yy.y	X of 101	7.5	298

Results for parabens in urine are reported in micrograms per liter (µg/L).

Not Actual Results

Frequently Asked Questions about **Parabens**

Where are parabens found?	• Cosmetics and personal care products, including some: – Make-up, such as mascara, eye shadow, lipstick, and foundation. – Facial cleansers and scrubs. – Moisturizers, lotions, and sunscreens. – Shampoos, conditioners, and shaving creams. • Baby products, such as some lotions, baby wipes, and diaper rash ointments. • Some over-the-counter and prescription medications. • Some household products, such as some stain removers and pet shampoos.
What are possible health concerns?	Scientists are still studying how parabens might affect people's health. There is concern that some parabens: • May interfere with the body's natural hormones. • May decrease fertility.
What are possible ways to reduce exposure?	• Consider choosing cosmetics, personal care products, and baby products that use natural preservatives, such as vitamin C (might have words like "ascorbate" or "ascorbic" on the label). • Try natural oils for skin and hair, such as coconut oil, olive oil, and sunflower seed oil. • For infants, consider using plain washcloths instead of baby wipes, and wash their skin with ordinary soap and water.

For More Information

Natural alternatives for hair and skin products: www.epa.gov/region9/healthy-hair/ingredients.html

Not Actual Results

Your Lab Result for **Triclosan**

We tested your urine for triclosan. Triclosan is used to kill bacteria. It is added to soaps and other consumer products labeled as "antibacterial" or "antimicrobial."

Your triclosan result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with triclosan in their urine	Middle level in the U.S.	95th percentile in the U.S.
[XX.X/Not found/Not tested]	xx.x	yy.y	X of 101	11.1	544

Results for triclosan in urine are reported in micrograms per liter (µg/L).

Did you find triclosan in my urine?

[Yes. Your triclosan result was XX.X µg/L./No./No. We were not able to test your urine for triclosan.]

What can I compare my result to?

You can use the table above to compare your triclosan result to:

Other firefighters in this study. We found triclosan in [all/most of the/some of the] 101 firefighters tested. The results ranged from xx.x to yy.y µg/L.

Middle level in the U.S. Half the adults tested in the U.S. had a result below 11.1 µg/L and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below 544 µg/L.

The U.S. middle level and 95th percentile do not tell us anything about what level of triclosan in urine might be a health concern. We are providing this information so that you can compare your result to those of other U.S. adults.

No state or federal agency has established a level of concern for triclosan. Scientists are still studying how triclosan might affect health. The next page explains more about triclosan.

Not Actual Results

Frequently Asked Questions about **Triclosan**

Where is triclosan found?	• Many liquid hand soaps described as "antibacterial" on the label. • Some toothpastes, deodorants, cosmetics, facial cleansers, body washes, and mouthwashes. • Many consumer products, such as some cutting boards, toys, clothes, towels, paint, and garden hoses.
What are possible health concerns?	Scientists are still studying how triclosan may affect people's health. There is concern that triclosan: • May interfere with the body's natural hormones. • May make it harder for antibiotic medicines to fight infections in the body. This is because overuse of triclosan may cause changes in bacteria that make them harder to kill.
What are possible ways to reduce exposure?	• Choose ordinary soap instead of soap described as "antibacterial" on the label. Antibacterial soap with triclosan provides no known extra health benefits over ordinary soap. • Avoid products that contain triclosan, unless you have a medical reason for using them. For example, toothpaste with triclosan may help prevent gingivitis (inflammation of the gums).

For More Information

CDC fact sheet: www.cdc.gov/biomonitoring/Triclosan_FactSheet.html

Triclosan in the San Francisco Bay: www.sfei.org/sites/default/files/RMP2011_TriclosanFactsheet_Final4web.pdf

Not Actual Results

Part 8: **Phthalates** in Urine

Your Lab Results for **Phthalates**

We tested your urine for phthalates. Phthalates are added to vinyl to make soft and flexible plastic products, such as shower curtains. Phthalates are also found in scented products, coatings like nail polish and paint, and a variety of other consumer goods.

Did you find phthalates in my urine?

[Yes. We found 5 chemicals in your urine that show you were exposed to phthalates.]

What can I compare my results to?

You can use the table in this packet to compare each phthalate result to:

Other firefighters in this study. We found some phthalates in [all/most of the/some of the] 101 firefighters tested.

Middle level in the U.S. Half the adults tested in the U.S. had a result below the middle level and half above.

95th percentile in the U.S. 95% of adults tested in the U.S. had a result below the 95th percentile.

The U.S. middle levels and 95th percentiles do not tell us anything about what levels of phthalates in urine might be a health concern. We are providing this information so that you can compare your results to those of other U.S. adults.

No state or federal agency has established a level of concern for any phthalate. Scientists are still studying how phthalates might affect health. The next page contains a table with your phthalate results, followed by a page that explains more about phthalates.

Not Actual Results

Your Lab Results for **Phthalates**

Chemical measured	Your result	Lowest result found in this study	Highest result found in this study	Number of FOX firefighters with this phthalate in their urine	Middle level in the U.S.	95th percentile in the U.S.	Phthalate you may have been exposed to
Mono-ethyl phthalate	[XX.X]	xx.x	yy.y	X of 101	60.5	1,110	Diethyl phthalate
Mono-n-butyl phthalate	[XX.X]	xx.x	yy.y	X of 101	14.5	68.9	Di-n-butyl phthalate or Benzylbutyl phthalate
Mono-benzyl phthalate	[XX.X]	xx.x	yy.y	X of 101	6.0	39.6	Benzylbutyl phthalate
Mono-3-carboxypropyl phthalate	[XX.X]	xx.x	yy.y	X of 101	2.9	21.8	Di-n-octyl phthalate
Mono-(2-ethyl-5-carboxypentyl) phthalate	[XX.X]	xx.x	yy.y	X of 101	18.8	126	Di-2-ethylhexyl phthalate
Mono-cyclohexyl phthalate	[Not found]	xx.x	yy.y	X of 101	Not available	Not available	Di-cyclohexyl phthalate

Results for phthalates in urine are reported in micrograms per liter (µg/L).

Not Actual Results

Frequently Asked Questions about **Phthalates**

Where are phthalates found?	• Products made from flexible vinyl plastics, sometimes called "PVC" or labeled with the recycling symbol "3", including: – Shower curtains, flooring, and coverings on wires and cables. – School lunchboxes, binders, backpacks, modeling clay, and some soft plastic and inflatable toys. – Some plastic food packaging and some plastic containers. – Tubing and gloves used in food processing and medical care. • Fragrances in some candles, air fresheners, and personal care products like lotions, perfumes, hair products, and deodorants. • Some nail polish, paint, floor finishes, caulk, and adhesives. • Some medications and dietary supplements.
What are possible health concerns?	Some phthalates: • Can interfere with the body's natural hormones. • Can affect development in the fetus, infants, and children. • Can decrease fertility. • May contribute to allergies and asthma.
What are possible ways to reduce exposure?	• Choose non-plastic alternatives when possible. Otherwise, avoid flexible vinyl plastics, sometimes called "PVC" or labeled with a "3". • Eat more fresh food and less processed and packaged food. • Choose products that do not include "fragrance" on the ingredient list. • Because phthalates come out of products and collect in dust, wash your hands often, especially before eating or preparing food, clean your floors regularly, and use a damp cloth to dust.

For More Information

Fact sheets on phthalates:

www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

http://toxtown.nlm.nih.gov/text_version/chemicals.php?id=24

Not Actual Results