The following Formaldehyde samples were collected from JFK on 11/15/18 from the listed areas:

Reference Desk LM01

M04 by the Center Soft Wall

M04E Desk

M04D Bookcase

M23 Center Area Work Desk.

U18 Kitchen Center Ledge.

U02 Secretarial Desk

U02A Corner Desk

U08 Round Table





Thank you for using

IAQ Commercial Survey!

If you have questions about your report,

please contact your service provider who performed this test.

Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: Reference Desk; LM01

Sample Volume (L): 4.4

Date Sampled: 11/15/2018 Sample Type: TDT XX154 Sample Condition: Acceptable

Scan Date: 12/05/2018 Report Date: 12/06/2018

High

Report Number: 75508

Laboratory ID: 75506-1

Order Date: 12/04/2018

Formaldehyde Concentration: < 14 ng/L

Your Formaldehyde Level (Highlighted)



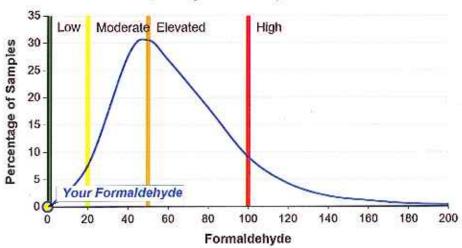
Moderate

Elevated 20-50 ng/L 16-40 ppb 40-80 ppb

50-100 ng/L > 100 ng/L > 80 ppb

Recommendation: No significant formaldehyde issues.

All IAQ Survey Formaldehyde Results



This chart represents the Formaldehyde distribution of over 7,000 samples.

Approximately half the samples have concentrations in the 30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.





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The US Occupational Safety and Health Administration (OSHA) has set a workplace permissible exposure limit (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a recommended exposure limit (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Туре
	ng/L	ppb	
OSHA	630 940 2,500	500 750 2,000	Action Level (8 hour) PEL (8 hour) STEL (15 min)
NIOSH	20 120	16 100	REL (8 hour) Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
LEED	32	27	Green Building (4 hour)
WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

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PEL: Permissible Exposure Limit REL: Recommended Exposure Limit

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Note: Concentration can be expressed in several ways and various organizations may use different units.

 $1 \text{ ng/L} = 1 \mu\text{g/m}^3 = 0.001 \text{ mg/m}^3$

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

pph concentration = ng/L concentration * 0.8 or ng/L concentration= pph concentration * 1.25

Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.





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- Products that contain urea-formaldehyde (UF) resins
 - particleboard, hardwood plywood paneling, medium density fiberboard
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 - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- · Disinfectant cleaning products and soaps
- Proservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
 - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

Additional Resources

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US National Institutes of Health (NIH): ToxTown: Formaldehyde

Chemical Reviews (Journal): Formaldehyde in the Indoor Environment

Household Products Database: Formaldehyde

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Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: M04; Center Soft Wall

Sample Volume (L): 4.2

Date Sampled: 11/15/2018 Sample Type: TDT ZZ116 Sample Condition: Acceptable Report Number: 75506 Laboratory ID: 75506-2

> Thank you for using IAQ Commercial Survey!

If you have questions about your report, please contact your service provider who

performed this test.

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/05/2018

Formaldehyde Concentration: 18 ng/L (15 ppb)

Your Formaldehyde Level (Highlighted)

Economic Chappe

Moderate

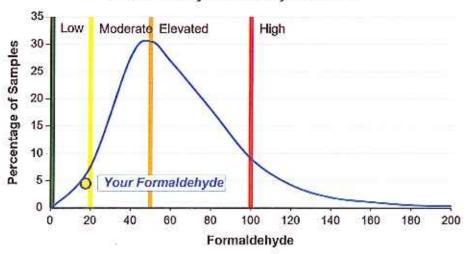
Elevated F

High

20-50 ng/L 16-40 ppb 50-100 ng/L > 100 ng/L 40-80 ppb > 80 ppb

Recommendation: No significant formaldehyde issues.

All IAQ Survey Formaldehyde Results



This chart represents the Formaldehyde distribution of over 7,000 samples.

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Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.

Page 1 of 4





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- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- · Disinfectant cleaning products and soaps
- Preservatives
- · Personal care products, especially certain hair products
- Cosmetics
- Pet care products
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Additional Resources

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US National Institutes of Health (NIH): ToxTown: Formaldehyde

Chemical Reviews (Journal): Formaldehyde in the Indoor Environment

Household Products Database: Formaldehyde

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Air Analysis For: JFK Library 18-152076-016 Location Tosted: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: M04E: Desk Sample Volume (L): 4.0

Date Sampled: 11/15/2018 Sample Type: TDT AB684 Sample Condition: Acceptable

Report Number: 75506 Laboratory ID: 75506-3

> Thank you for using IAQ Commercial Survey!

If you have questions about your report, please contact your service provider who

performed this test.

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/06/2018

Formaldehyde Concentration: 56 ng/L (45 ppb)

Your Formaldehyde Level (Highlighted)

Elevated High Low Moderate > 100 ng/L 50-100 ng/l 20-50 ng/L < 20 ng/l 16-40 ppb 40-80 ppb > 80 ppb < 16 ppb

Recommendation: Consider locating and removing formaldehyde sources. See formaldehyde sources section for more information.

All IAQ Survey Formaldehyde Results Moderate Elevated High Low 30 Percentage of Samples Your Formaldehyde 25 20 15 10 5 0 80 100 120 140 160 180 200 20 60 40 0 Formaldehyde

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Chemical Reviews (Journal): Formaldehyde in the Indoor Environment

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Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Chency, WA 99004

Client Sample ID: M04D: Bookshelf

Sample Volume (L): 4.0

Date Sampled: 11/15/2018 TDT ZZ277

Sample Type: Sample Condition: Acceptable Report Number: 75506 Laboratory ID: 75506-4

> Thank you for using IAQ Commercial Survey!

If you have questions about your report, please contact your service provider who

performed this test.

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/06/2018

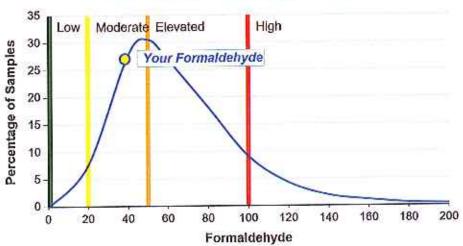
Formaldehyde Concentration: 39 ng/L (31 ppb)

Your Formaldehyde Level (Highlighted)

Elevated High Moderate 20-50 ng/L 50-100 ng/L > 100 ng/l < 20 ng/l > 80 ppb 16-40 ppb 40-80 ppb < 16 ppb

Recommendation: Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

All IAQ Survey Formaldehyde Results



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Additional Resources

US OSHA Toxic and Hazardous Substances-Formaldehyde

US OSHA Fact Sheet-Formaldehyde

US NIOSH Formaldehyde

World Health Organization (WHO) Air Quality Guidelines for Europe. 2nd Edition (2000): pg 87-91

Europe: Report No. 7-Indoor Air Pollution by Formaldehyde in European Countries (1990)

US Consumer Product Safety Commission (CPSC) Update on Formaldehyde (2013)

US Environmental Protection Agency: Formaldehyde

US Agency for Toxic Substances and Disease Registry (ATSDR): Formaldehyde ToxFAQs™

US National Institutes of Health (NIH): ToxTown: Formaldehyde

Chemical Reviews (Journal): Formaldehyde in the Indoor Environment

Household Products Database: Formaldehyde

Those results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism) using the Hantzsch, or acetylacetone (acet), method. This test method has been correlated with or is compliant with the California Air Resources Board (CARB) § 83120, European DIN Standard EN-717, and ASTM methods D-5682 and E-1333. It has also been compared with DNPH testing used in NIOSH 2018 and found to be in coord agreement.

Canonia Air resolutes sound of chiraly a strate, European bit of factors over which Prism has no control, which may include, but are not limited to, the sampling technique utilized, the size of sounds contained in this report are dependent upon a number of factors over which Prism has no control, which may include, but are not limited to, the sampling technique utilized, the size of sounds, and the ability of the sampler to collect a proper or suitable sample. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and height Prism, nor its agonts, officers, directors, employees, or successors shall be liable for any claims, actions, causes of action, costs, lass of service, medical or other expenses or any compensation whatsoever which may now or hereafter occur or scorue based upon the information or opinions contained herein.





Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: M23: Center Area Workdesk

Sample Volume (L): 4.0

Date Sampled: 11/15/2018 Sample Type: TDT ZZ252 Sample Condition: Acceptable Report Number: 75506 Laboratory ID: 75506-5

> Thank you for using IAQ Commercial Survey!

If you have questions about your report, please contact your service provider who performed this test.

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/06/2018

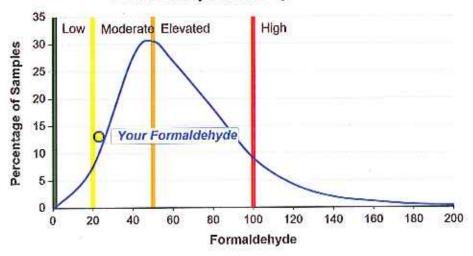
Formaldehyde Concentration: 24 ng/L (19 ppb)

Your Formaldehyde Level (Highlighted)

Low Moderate Elevated High
< 20 ng/L
< 16 ppb 40-80 ppb > 80 ppb

Recommendation: Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

All IAQ Survey Formaldehyde Results



This chart represents the Formaldehyde distribution of over 7,000 samples.

Approximately half the samples have concentrations in the 30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.





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The US Occupational Safety and Health Administration (OSHA) has set a workplace permissible exposure limit (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a recommended exposure limit (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Туре
50 10.00 (10.00	ng/L	pph	
OSHA	630 940 2,500	500 750 2,000	Action Level (8 hour) PEL (8 hour) STEL (15 min)
NIOSH	20 120	16 100	REL (8 hour) Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
LEED	32	27	Green Building (4 hour)
WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

LEED; Leadcrship in Energy & Environmental Doslgn (Green Building Council)

WHO; World Health Organization

PEL: Permissible Exposure Limit REL: Recommended Exposure Limit

TLV: Threshold Limit Value TWA: Time Weighted Average STEL: Short Term Exposure Limit

Note: Concentration can be expressed in several ways and various organizations may use different units.

1 ng/L = 1 µg/m³ = 0.001 mg/m³

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/l. concentration * 0.8 or ng/L concentration= ppb concentration * 1.25

Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.





There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
 - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
 - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- · Glues and adhesives
- Paints and coatings
- Teytiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
 - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

Additional Resources

US OSHA Toxic and Hazardous Substances-Formaldehyde

US OSHA Fact Sheet-Formaldehyde

US NIOSH Formaldehyde

World Health Organization (WHO) Air Quality Guidelines for Europe, 2nd Edition (2000); pg 87-91

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US Environmental Protection Agency: Formaldehyde

US Agency for Toxic Substances and Disease Registry (ATSDR): Formaldehyde ToxFAQs™

US National Institutes of Health (NIH): ToxTown: Formaldehyde

Chemical Reviews (Journal): Formaldehyde in the Indoor Environment

Household Products Database: Formaldehyde

These results are authorized by the Laboratory Director or approved representative.

This snallysis was performed by Prism Analytical Technologies, Inc. (Prism) using the Hanizsch, or acetylacetone (aceo), method. This test method has been correlated with or is compliant with the California Air Resources Board (CARB) § 83120, European DNN Standard FN-717, and ASTM methods D-5582 and E-1333. If has also been compared with DNPH testing used in NIOSH 2016 and found to be in good exceeded.

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Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: U18: Kitchen Center Ledge

Sample Volume (L): 4.0

Date Sampled: 11/15/2018 Sample Type: TDT XX085 Sample Condition: Acceptable

Report Number: 75506 Laboratory ID: 75506-6

> Thank you for using IAQ Commercial Survey!

If you have questions about your report, please contact your service provider who

performed this test.

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/06/2018

Formaldehyde Concentration: 15 ng/L (12 ppb)

Your Formaldehyde Level (Highlighted)

Moderate

Elevated

High

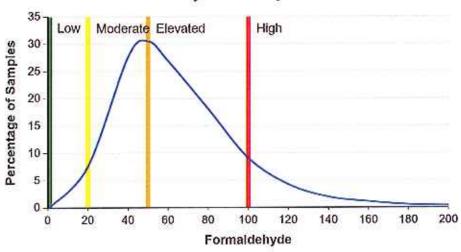
20-50 ng/L 16-40 ppb

50-100 ng/L > 100 ng/L 40 80 ppb

> 80 ppb

Recommendation: No significant formaldehyde issues.

All IAQ Survey Formaldehyde Results



This chart represents the Formaldehyde distribution of over 7,000 samples.

Approximately half the samples have concentrations in the 30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.





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The US Occupational Safety and Health Administration (OSHA) has set a workplace permissible exposure limit (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a recommended exposure limit (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Туре
	ng/L	ppb	
OSHA	630 940 2,500	500 750 2,000	Action Level (8 hour) PEL (8 hour) STEL (15 min)
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ACGIH	370	300	TLV (8 hour)
LEED	32	27	Green Building (4 hour)
WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

LEED; Leadership in Energy & Environmental Design (Green Building Council)

WHO: World Health Organization

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

TLV: Threshold Limit Value

TWA: Time Weighted Average

STEL: Short Term Exposure Limit

Note: Concentration can be expressed in several ways and various organizations may use different units.

1 ng/L = 1 µg/m3 = 0.001 mg/m3

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration * 0.8 or ng/L concentration= ppb concentration * 1.25

Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.





There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
 - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
 - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- · Paints and coatings
- Textiles
- · Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
 - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

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US OSHA Fact Sheet-Formaldehyde

US NIOSH Formaldehyde

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Europe: Report No. 7-Indoor Air Pollution by Formaldehyde in European Countries (1990)

US Consumer Product Safety Commission (CPSC) Update on Formaldehyde (2013)

US Environmental Protection Agency: Formaldehyde

US Agency for Toxic Substances and Disease Registry (ATSDR): Formaldehyde ToxFAQs™

US National Institutes of Health (NIH): ToxTown: Formaldehyde

Chemical Reviews (Journal): Formaldehyde in the Indoor Environment

Household Products Database: Formaldehyde

These results are authorized by the Laboratory Director or approved representative.

This snalysis was performed by Phism Analytical Technologies, Inc. (Phism) using the Hanizsch, or acetylacetone (acad), method. This test method has been correlated with or is compliant with the Cathorna Air Resources Search (CARD) § 93120, European DIN Standard EN-717, and ASTM methods D-5592 and E-1333. It has also been compared with DNPH testing used in NIOSH 2016 and found in the production required.

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Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Chenoy, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: U02: Secretarial Desk

Sample Volume (L): 4.0

Date Sampled: 11/15/2018 Sample Type: TDT TT011

Sample Condition: Acceptable

Report Number: 75508 Laboratory ID: 75506-7

> Thank you for using IAQ Commercial Survey!

If you have questions about your report, please contact your service provider who

performed this test.

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/06/2018

Formaldehyde Concentration: < 15 ng/L (< 12 ppb)

Your Formaldehyde Level (Highlighted)



Moderate 20-50 ng/l 16-40 ppb

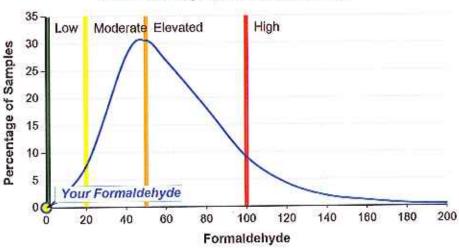
Elevated 50-100 ng/L

High > 100 ng/L

> 80 ppb 40-80 ppb

Recommendation: No significant formaldehyde issues.

All IAQ Survey Formaldehyde Results



This chart represents the Formaldehyde distribution of over 7,000 samples.

Approximately half the samples have concentrations in the 30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.





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The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Туре
	ng/L	ppb	
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ACGIH: American Conference of Governmental Industrial Hygienists.

LCCD: Leadership in Fnergy & Environmental Design (Green Ruilding Council)

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REL: Recommended Exposure Limit

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STEL: Short Term Exposure I imit

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Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.





There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

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- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
 - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

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US OSHA Fact Sheet-Formaldehyde

US NIOSH Formaldehyde

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US Environmental Protection Agency: Formaldehyde

US Agency for Toxic Substances and Disease Registry (ATSDR): Formaldehyde ToxFAQs™

US National Institutes of Health (NIH): ToxTown: Formaldehyde

Chemical Reviews (Journal): Formaldehyde in the Indoor Environment

Household Products Database: Formaldehyde

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The results contained in this report are dependent upon a number of factors over which Prism has no control, which may include, but are not limited to, the sampling technique utilized, the size or source of sample, and the childy of the sampler to collect a proper or suitable sample. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, nor its agents, officers, directors, employees, or successors shall be liable for any claims, actions, causes of action, costs, loss of service, medical or other expenses or any compensation whatsoever which may now or hereafter occur or accrue based upon the information or opinions contained herein.





75506-8

Thank you for using

IAQ Commercial Survey!

If you have questions about your report,

please contact your service provider who

performed this test.

Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: U02A: Desk Corner

Sample Volume (L): 4.0 Date Sampled: 11/15/2018

Sample Type: TDT ZZ100

Sample Condition: Acceptable

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/06/2018

Report Number: 75506

Laboratory ID:

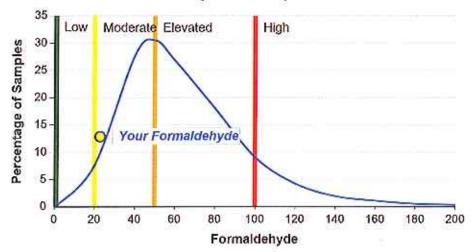
Formaldehyde Concentration: 23 ng/L (19 ppb)

Your Formaldehyde Level (Highlighted)

Moderate Elevated Low High < 20 ng/L 20-50 ng/L 50-100 ng/L > 100 ng/L 16-40 ppb 40-80 ppb > 80 ppb < 16 ppb

Recommendation: Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

All IAQ Survey Formaldehyde Results



This chart represents the Formaldehyde distribution of over 7,000 samples.

Approximately half the samples have concentrations in the 30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.





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	ng/L	ppb	
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NIOSH	20 120	16 100	REL (8 hour) Ceiling (15 min)
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LEED	32	27	Green Building (4 hour)
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OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

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WHO: World Health Organization

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TLV: Threshold Limit Value

TWA: Time Weighted Average

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To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below.

ppb concentration = ng/l, concentration * 0.8 or ng/L concentration= ppb concentration * 1.25

Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.





There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
 - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
 - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Prosorvatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
 - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

Additional Resources

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US National Institutes of Health (NIH): ToxTown: Formaldehyde

Chamical Reviews (Journal): Formaldehyde in the Indoor Environment

Household Products Database: Formaldehyde

Those results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism) using the Hantzsch, or acelylacetone (acad), method. This test method has been correlated with or is compliant with the Cstifornia Air Resources Board (CARB) § 93120, European D.N. Standard EN-717, and ASTM methods (1-6542 and E-1333. It has also been compared with DNPH testing used in NIOSH 2018 and found to be in good agreement.

The results conferned in this report are dependent upon a number of factors over which Prism has no control, which may include, but are not limited to, the sampling technique utilized. The results conferned in this report in the ability of the sampler to collect a proper or suitable sample. Therefore, the opinions conferned in this report in sy be invested and cannot be considered or construed as definitive and notifier Prism, nor its agents, officers, directors, employees, or successors shall be faithef for any dains, actions, coulse of action, costs, loss of service, medical or other expenses or any compensation whatsoever which may now or hereafter occur or accrue based upon the information or opinions contained herein.





Air Analysis For: JFK Library 18-152076-016 Location Tested: 816 F St. Cheney, WA 99004

Sampling Professional: Donald Johnson

Eastern Washington University

002 Martin Hall Cheney, WA 99004

Client Sample ID: U08: Round Table

Sample Volume (L): 4.0

Date Sampled: 11/15/2018 Sample Type: TDT TT739 Sample Condition: Acceptable Report Number: 75506 Laboratory ID: 75506-9

> Thank you for using IAQ Commercial Survey!

If you have questions about your report, please contact your service provider who

performed this test.

Order Date: 12/04/2018 Scan Date: 12/05/2018 Report Date: 12/06/2018

Formaldehyde Concentration: < 15 ng/L (< 12 ppb)

Your Formaldehyde Level (Highlighted)

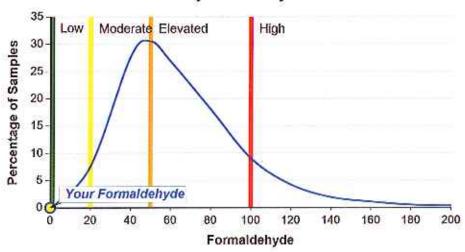


Moderate 20-50 ng/L 16-40 ppb Elevated High 50-100 ng/l > 100 ng/l

50-100 ng/l > 100 ng/l 40-80 ppb > 80 ppb

Recommendation: No significant formaldehyde issues.

All IAQ Survey Formaldehyde Results



This chart represents the Formaldehyde distribution of over 7,000 samples.

Approximately half the samples have concentrations in the 30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.





Prism Analytical Technologies, Inc., the creator of IAQ Commercial Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Prism Analytical Technologies, Inc. (ID 166272) is accredited by the AIHA Laboratory Accreditation Programs, LLC (All IA-LAP, LLC) in the Unique Scope accreditation program for Formaldehyde as documented by the Scope of Accreditation Conflicate and associated Scope. Reference internal SOP 523.





The US Occupational Safety and Health Administration (OSHA) has set a workplace permissible exposure limit (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a recommended exposure limit (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Type
	ng/L	ppb	
OSHA	630 940 2,500	500 750 2,000	Action Level (8 hour) PEL (8 hour) STEL (15 min)
NIOSH	20 120	16 100	REL (8 hour) Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
LEED	32	27	Green Building (4 hour)
WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Floalth and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACCIH: American Conference of Governmental Industrial Hygienists

LEFD; Leadership in Energy & Environmental Design (Green Building Council)

WHO: World Health Organization

PEL: Permissible Exposure Limit REL: Recommended Exposure Limit

TLV: Threshold Limit Value TWA: Time Weighted Average STEL: Short Term Exposure Limit

Note: Concentration can be expressed in several ways and various organizations may use different units.

1 na/L = 1 ua/m3 = 0.001 mg/m5

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration * 0.8 or ng/L concentration= ppb concentration * 1.25

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