

ENVIRONMENTAL HEALTH AND SAFETY

ELECTRO MAGNETIC FIELDS (EMF'S)

Because of the potential adverse health effects and to prudently avoid high levels of electro-magnetic fields, Rochester Community Schools will take the following actions to reduce exposure to electro-magnetic fields.

These actions can consist of lowering exposure levels or limiting exposure time. Additionally, through future renovations or as new equipment is purchased, Rochester Community Schools will make all reasonable attempts to reduce electro-magnetic field levels to the lowest practical amounts.

As new scientific information on the health effects of electro-magnetic fields becomes available, the Director of Facility Operations will review baseline measurements and take appropriate measures to make sure district facilities remain below scientifically acceptable levels.

As part of the process in lowering occupant exposure to electro-magnetic fields, Rochester Community Schools, through the Director of Facility Operations will also conduct the following steps:

A. Existing Buildings

A baseline survey will be conducted on all district buildings ascertaining existing levels of electro-magnetic fields. The survey will consist of measuring all occupied areas inside each building as well as taking measurements from the grounds. Measurements will be compiled in report form and given to the Facility Office with an additional copy forwarded to each building.

B. Remodeling

Whenever large scale renovations occur that include changing electrical service, distribution panels or electrical feed lines, the District will require the placement of such equipment so it will have

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minimal effect on building users. Items such as placing feeder conduit runs in the hallways, having storage rooms between electrical distribution rooms and classrooms will be required as part of the design process. In addition, no primary power feeds or primary power transformers will be placed near occupied rooms. At the conclusion of any project that might affect occupant exposure to electro magnetic fields, a survey of the area measuring electro magnetic fields will be taken.

C. New Construction

The commissioned architect for the Rochester Community Schools will design facilities and sites incorporating the district's standards for minimizing exposure to EMF's. The distance between building occupants and equipment transmitting high magnetic fields will be incorporated into any design. Main electrical distribution lines will be run using areas that are not normally occupied for long duration. Power distribution room designs will be required to have unoccupied buffer rooms between the distribution rooms and occupied areas.

As part of the project close-out and upon completion of a major construction project, a building survey measuring levels of electro-magnetic fields will be conducted. The measurements will be compiled and given to the Facility Office with a second copy sent to the individual building.

D. Site Purchases

Before the purchase of any property, the Rochester Community Schools, as part of the initial Phase I property audit, will require readings to be taken of the site to measure electro-magnetic fields. Rochester Community Schools, to the extent possible, will avoid purchasing any property with readings above levels recommended by the International Radiation Protection Association. The Rochester Community Schools will also avoid purchasing any site that has any high voltage transmissions lines exceeding IRPA levels, other than those for building service.

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E. Employee Training

As part of the Employee Right to Know Program, each new employee will be informed of the districts efforts to reduce exposure to any electro-magnetic field. All new employees will also be informed that each building has undergone an EMF study and that those results would be made available upon request. A record of any request should be included in the individual's personnel file for use at a later date.

The Rochester Community Schools, through the Director of Facility Operations, will make sure at least one individual be given the resources to remain fully aware of any scientific advances with regards to electro-magnetic fields. The form of this information can include seminars, periodicals and subscriptions.

For reference purposes, at this time, the district will use the Environmental Protection Agency information booklet about electro magnetic fields, publication #402-R-92-008.

HAZARDOUS WASTE REDUCTION AND MANAGEMENT

The document "Rochester Community Schools Hazardous Waste Management Program " is to be used in the management of hazardous disposal in the district. Sections, 2.A, 2.B, 4.1, 5.1, 5.2, 5.3, and 5.4 of the Rochester Community School's Hazardous Waste Management Program will reflect the intention of the district to maintain a Conditionally Exempt Small Quantity Generator Status, with the accompanying change responsibilities of staff. The revisions will not affect the legal requirements described elsewhere in the document.

- A. The Superintendent will designate the Manager of Grounds and Maintenance to act as the Hazardous Waste Coordinator for the district.
- B. Rochester Community Schools will provide 40 hours of training for key personnel in Grounds and Maintenance. Additional information will be provided in writing or at meetings for employees and

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- students in areas which generate hazardous wastes. The Hazardous Waste Coordinator could request advice from the Environmental Health and Safety Committee regarding the contents of the training and information. The training will be repeated at least once each year.
- C. The Hazardous Waste Coordinator will distribute generic lists of typical school hazardous wastes as part of the training and information. At the outset, the Coordinator may use the inventory of Wastes of Concern in the Michigan Department of Education guidebook, Pollution Prevention in Schools guidebook, pp.4-10 to 4-14, and pp. 4-20 to 4-21.
 - D. The Hazardous Waste Coordinator and all staff in areas which generate hazardous waste will emphasize hazardous waste reduction and avoidance practices whenever possible. At the outset, they may use the suggestions given in the guidebook, pp. 4-3, and 4-10 to 4-14.
 - E. The Rochester Community Schools will strive to maintain Conditionally Exempt Small Quantity Generator status. This status requires that the district never generate in excess of 100 kilograms of hazardous waste in a month, and never accumulate over 1000 kilograms of hazardous waste. This status allows staff to move wastes to a single secure accumulation area for the entire district, and exempts the generator from time deadlines for shipping accumulated wastes.
 - F. The Hazardous Waste Coordinator will establish a single area to accumulate the District's hazardous waste. The area shall be environmentally secure and under control of the Hazardous Waste Coordinator and maintenance and grounds staff.
 - G. Every employee shall inform the principal whenever they have hazardous materials which should be removed and taken to the accumulation area.

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- H. Each building principal shall request hazardous waste removal as needed, by using a work order form to notify the Hazardous Waste Coordinator.
- I. The Hazardous Waste Coordinator will designate trained staff to respond to a work order request, remove the hazardous waste material, and transfer it to the secure accumulation area.
- J. The Hazardous Waste Coordinator will arrange for pick-up and disposal of the accumulated wastes at regular intervals, at least semi-annually. The Coordinator shall select a reliable, licensed hazardous waste transporter, and may specify types of assistance to be provided by the transporter, including training for staff if needed.
- K. The work order system would not cover the regular on-going program of waste pick-up and recycling which is already in place in the transportation area. However, additional waste types in the transportation area could be covered by the work order system. The Transportation Supervisor shall maintain communication with the Hazardous Waste Coordinator regarding the hazardous waste management system in the transportation area.

INDOOR AIR QUALITY

The Rochester Community Schools has developed written policies and guidelines on preventing, identifying and correcting indoor air quality problems. The goal of Rochester Community Schools is to provide a healthy indoor environment which is conducive to the learning process of its students and staff. The guidance provided in this document is based on what is known and generally accepted at this time.

The Rochester Community Schools is committed to following the guidelines attached in pursuit of the continual improvement in the quality of indoor air.

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- A. The Rochester Community Schools will be committed to a proactive approach in protecting District sites by not introducing products that may contaminate the indoor air quality.
- B. Radon testing will occur as set forth in the Rochester Community Schools Radon Guidelines. This will occur immediately in rooms showing structural defects or cracks. Any radon tests with results greater than or equal to 4 pci/L will be considered an action level for further investigation.
- C. CO₂ levels of 1000 ppm or less will be established as an acceptable CO₂ level. See the Environmental Health and Safety Regulations for additional information on CO₂ levels and reduction.
- D. ASHRAE standard 62-1989 recommending 20 cfm/person of outdoor air will be utilized as the standard in new construction or HVAC retrofitting.
- E. There will be a 48 Hour ventilation period with 100% outdoor air, if possible, before a renovated area will be occupied. Low emitting VOC products will be the product of choice and specified for new building materials in new construction, renovations, and redecorating.
- F. The District Lead Management Program must be followed for major renovation projects.
- G. Contaminant producing activities (painting, pesticide application, roofing, etc.) will not occur while school is in session. Demolition will not occur during the school day unless the area and ventilation system are sealed from occupied areas.
- H. Thermal environment will be maintained at a level conducive to learning. Action by custodial personnel will be taken if temperatures exceed 78⁰ F or drop below 68⁰ F. Action can include changing cooling setpoints for schools with air conditioning.

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- I. Regular in-service training will be provided to inform and educate building employees about the cause(s) of indoor air problems and

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the actions that need to be taken or avoided to minimize their exposure to contaminants.

- J. Asbestos abatement requiring negative air pressure containment will not occur while school is in session.

THERMAL ENVIRONMENT

A. Air Temperature

1. Winter:

- a. Range of 68⁰ F to 72⁰ F, during occupied hours.
- b. Action will be taken if the temperature drops below 68⁰F. A setback temperature of 60 degrees during unoccupied hours.
- c. If the custodial personnel determines the problem is a mechanical malfunction that they cannot correct, and the temperatures are still above or below the guidelines, the custodian will complete a properly documented work order and submit it to the Maintenance Department.

2. Summer:

- a. Range of 72 - 76⁰ F during occupied hours.
- b. Action will be taken if the temperature rises above 76 degrees. A setback temperature of 85 during unoccupied hours.

- B. HVAC systems will remain in the occupied mode during the use of any contaminants (paints, adhesives, epoxy, etc.) other than those used in normal daily routine activities.

- C. During unoccupied periods of time, the air conditioning units will remain off with the exception of contracted rooms and other special events as deemed necessary by the Director of Facility Operations.

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D. Relative Humidity

- 1. Ideal range for humidity is between 30% - 60%; however, at the present time the Rochester Community Schools is not

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equipped with any humidification or dehumidification equipment.

VENTILATION

A. Air Exchange

1. Air exchange rates are usually referred to in terms of cubic feet per minute (CFM) per person.
2. ASHRAE Standard 62-1989 "Ventilation for Acceptable Indoor Air Quality" will be utilized as the guideline for acceptable ranges of outdoor air consisting of a minimum of 20 CFM of outdoor air per person. The purpose of this Standard is to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to avoid adverse health effects.
3. It is recognized that many school buildings were designed according to much lower ventilation standards (usually 5 CFM per person) and that they may not be able to obtain the ASHRAE Standard of 20 Cubic Feet per Minute, (CFM). However, every effort will be made to ensure that the maximum achievable level of outdoor air is being met by utilizing the maximum efficiency of the HVAC systems and by increasing outdoor air when appropriate by using the carbon dioxide levels as a guide.
4. School buildings which are controlled by a computerized energy management system should be able to achieve 20 CFM of outdoor air or greater when outdoor temperatures exceed 30⁰ F by increasing the air damper setting. The preset level of 8 CFM or less in these schools will be raised when outdoor air reaches appropriate temperatures.

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B Carbon Dioxide (CO₂) Measurements

1. CO₂ levels will be utilized as an indicator of adequate ventilation. One thousand (1000) ppm or less will be established as an acceptable CO₂ level.

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2. Action level to initiate HVAC inspection - 1000 ppm.
3. In many school buildings, actual CO₂ measurements will be unable to achieve the acceptable level of 1000 ppm or less unless the HVAC systems are retrofit. However, every effort will be made to ensure maximum efficiency of all HVAC systems including regular maintenance to help obtain the lowest CO₂ levels possible within the confines of the buildings' HVAC design.
4. In school buildings functioning with an EMS to control their HVAC systems, the acceptable level of 1000 ppm or less should be obtained except during extreme weather conditions.
5. CO₂ measurements and record keeping should include:
 - a. Relative occupancy - number of students or faculty
 - b. Air damper settings when possible
 - c. Weather conditions - outside temperature
 - d. Outdoor CO₂ samples - taken near outdoor air intakes
 - e. One or more readings will be taken in control locations to serve as baselines for comparison.
 - f. Measurements also can be taken in the general breathing zone (at least 2 feet from exhaled breath) and compared to the air entering return grilles to check the adequacy of air mixing.
 - g. Samples taken when concentrations are expected to peak in the mid to late afternoon.
 - h. Status of doors opened or closed
 - i. Operational status of fan units

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6. CO₂ measurements should be performed when the building is closed to the outside during heating or air conditioning periods and when the rooms are occupied at their normal capacity.
7. Testing will be performed on an as needed basis and records

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will be maintained at the Facility Operations Office and at the building site.

C. Indoor Air Quality Profile (IAQ)

1. An IAQ Profile is a description of the features of the building structure, function, and occupancy that impact IAQ. The IAQ Profile can help building management to identify potential problem areas and prioritize budgets for maintenance and future modifications.
2. The following procedures will be utilized to establish an IAQ Profile:
 - a. Collect and review existing records.
 - b. Conduct a walk through inspection of the building.
 - c. Collect detailed information on the HVAC system, pollutant pathways, pollutant sources and building occupancy.
 - d. Refer to IAQ Management Checklist for details.
 - e. Utilize other appropriate forms to develop an IAQ Profile including: (see appendix)
 - i. Pollutant Pathway Record for IAQ Profiles,
 - ii. Pollutant and Source Inventory,
 - iii. Chemical Inventory,
 - iv. Zone/Room Record.
 - f. The Director of Facility Operations will assign appropriate staff responsibilities.

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D. Comprehensive Facilities Preventative Maintenance Program

1. Responsibility for managing a building for indoor air quality rests with the building operation and maintenance functions. A comprehensive facilities preventative maintenance program involves reviewing and amending current practice and establishing new procedures if necessary. It is used to

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manage scheduled maintenance including an automated preventative maintenance program to schedule repairs, to perform minor alterations to facilities, as well as to guide the reaction to unscheduled breakdown repairs and maintenance.

2. Preventative Maintenance must be coordinated with the building's utilization schedule. Painting, coil cleaning, pest control, or other projects involving the use of volatile organic chemicals should be scheduled during unoccupied periods.
3. An Indoor Air Quality Management Plan will consist of:
 - a. Selecting an IAQ Manager for Facility Operations.
 - b. Reviewing the IAQ Profile and existing records to:
 1. Evaluate the design, operation, and usage of the building.
 2. Identify potential IAQ problem locations.
 3. Identify staff and contractors whose activities affect IAQ.
 - c. Assigning staff responsibilities and training staff.
 - d. Refer to IAQ Management Checklist for details and HVAC Checklists.

DESIGN STANDARDS FOR NEW CONSTRUCTION AND RENOVATIONS

The intent of this guideline is to prevent the introduction of indoor air contaminants into the facility and to control the level of contamination and need for remediation.

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A. General Conditions

1. **Specifications** - Project designers shall specify if any hazardous materials have been specified during the course of the construction project. Provisions should be made stating the general contractor is responsible for the replacement cost and any resulting damages.
2. **Testing and Submittals** - All necessary MSDS information for construction materials and building furnishings will be placed

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on file with the district and will be the responsibility of the general contractor or architect to maintain. All information will indicate which products contain banned materials. Testing for the hazardous materials will be the responsibility of the specifying party if the information is not provided in the MSDS. Final copies of product information on all materials used must be submitted prior to final payment.

3. ***Balancing*** - All air and water systems should be required to be balanced by an independent firm both at time of substantial completion and immediately prior to the end of the warranty period. This should include the HVAC system and local and general exhaust systems.
4. ***Occupancy*** - Occupancy should occur no sooner than 48 hours after final installation of finish materials. During that period, ventilation systems should run at capacity in order to:
 - a. Test the system
 - b. Thoroughly dry the material
 - c. Accelerate any off gassing. Fresh air supply during this period should be 100% outdoor air.
5. ***Construction sequence*** - General contractor should submit a ventilation plan prior to commencing work. Attention should be given to occupied facilities. If at all possible, work should take place when the facility is unoccupied. This plan must demonstrate how the work site and the sources of contaminants will be isolated from inhabited areas and avoid

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contaminants reaching the occupants by infiltration, contamination, or inversion. Notification of minor work scheduled should be submitted to the facility one week prior to start date so staff and students may be notified of contaminants being present.

6. ***Temporary HVAC*** - If building HVAC is operated during construction, it should operate with all return air shut off and 100% outside air used when possible. Care must be taken to insure that contaminants from construction activities do not enter the outside air intakes. Temporary local exhaust and

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negative pressure may be alternative procedures to prevent contamination from entering occupied areas.

B. Sitework

1. ***Selection*** - In selecting a site, potential hazards should be identified. Poor building sites can affect indoor air quality. A Rochester Community Schools Phase 1 Environmental Survey must be completed for site proposed for purchases. This Environmental Survey will comply with Michigan law (P.A.141 of 1992).
2. ***Sensitizers and layout*** - Potential sources of organic and inorganic sensitizers should not be placed near fresh air intakes. Placement of air intakes and exhaust air outlets to avoid contamination should be 10 feet or more from a source of air contaminants. Landscaping near air intakes should be avoided to prevent the intake of excessive allergens and minimize mold and fungi growth. Ventilation practices that place crawl spaces, basements, and underground duct work under negative pressure could increase radon concentrations in buildings and should be avoided. If schools are located near roadways, contaminants associated with roads (lead, carbon monoxide, dust) should be screened and appropriate remediation established to keep at acceptable levels.

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3. ***Radon*** - This is covered under a separate section of this report. Buildings should not be constructed in areas with known elevated levels of Radon. All testing methods for radon during and after major renovation are listed in Section E, and should be strictly adhered to.

C. Concrete

1. ***Slabs*** - All penetrations of slab concrete should be sealed to prevent penetration by radon gas. Areas where sealers and curing agents are curing should be well ventilated. Occupancy should occur no sooner than 48 hours following the application.

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2. ***Additives*** - Any and all additives to concrete components should be listed on MSDS sheets.
- D. **Masonry**
1. ***Cleaning Masonry*** - High pressure water rather than acid should be used when cleaning existing dirt, residue, or construction residue. If acids must be used, then provisions must be made so that vapors are properly vented and runoff neutralized prior to disposal.
- E. **Wood**
1. ***Pressure treated wood*** - Pressure treated lumber (both ground contact and fire resistant) should be constructed in a properly ventilated area. Care should be taken not to inhale or ingest the sawdust. Pressure treated wood cannot be burned.
 2. ***Plywood and Casework*** - Hardwood, plywood, or products containing this material must be certified to be in compliance with the Hardwood Plywood Manufacturers Association Voluntary Standard for Low Emissions (NPA-987) and the US Department of Housing and Urban Development Standard (24 CFR part 380).
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3. ***Particle Board and Casework*** - Particle board or products containing this material must be certified to be in compliance with the National Particle Board Association Voluntary Standard for Formaldehyde Emissions (NPA-987), and US Department of Housing and Urban Development Standard (24 CFR part 3280).
 4. **All pre-drilled holes in plastic laminate casework must be plugged prior to delivery to the job site. All edges of particle board are to be covered with plastic laminate.**
- F. **Thermal and Moisture Protection**

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1. ***Roofing materials*** - All roofing materials and associated installation materials must be certified to be asbestos free. Specifications should be developed that include: contractor to remove all failed materials, especially all moist material, include plans to prevent air contaminants from entering the building, and work should be done during unoccupied times.
2. ***Polyisocyanurate and some polystyrenes*** - Polyisocyanurates and some polystyrenes off-gas hazardous chemicals when burned. Manufacturer's recommendations as to the proper use and handling of these materials must be followed.
3. ***Sealants*** - VOC emissions from sealant, adhesives, and caulks may vary for each compound. Emission rates are highest when they are curing. These materials should not be used. If they must be used, than low emitting brands should be used, and adequate ventilation provided. Occupancy should not occur until 48 hours after the last application.

G. Finishes

1. ***Floor Coverings, Carpet, Vinyl Products*** - Various flooring adhesives contain VOCs which are known to cause health problems. Formaldehyde is emitted from glue from carpet

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backings. Vinyl products off-gas plasticizers. Other flooring products such as wool fiber and vinyl asbestos also pose health problems. Manufacturers directions must be followed in the proper handling in repairing, removing, and disposing of these materials. A minimum of 48 hours gassing off period should be instituted between final installation and occupancy. Low emitting carpets and adhesives should be used whenever possible. Hard surfaces such as vinyl tile, terrazzo or wood shall be specified by district for all school hallways, common areas and program rooms during replacements, renovations, and new construction.

2. ***Asbestos*** - Not permitted in products used in schools or district buildings. All materials must be certified asbestos free.

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3. ***Fiberglass*** - The use of fiberglass for insulation inside heating ducts is prohibited.
4. ***Paint/Epoxy Coating*** - Paints and epoxy coatings have highly variable VOC levels. No painting should occur during regular school or business hours. Follow manufactures directions concerning use and disposal. A minimum 48 hour ventilation period should take place after painting is completed. When minor painting must occur in student or staff occupied areas, a two day ventilation period is required. HVAC system should remain in occupied mode and at 100% outside air when possible.
5. ***Urea-Formaldehyde Foam Insulation (UFFI)*** - UFFI will not be used in any district building. This is due to the environmental factors and improper formulation which can lead to significant formaldehyde emissions. UFFI has been banned in Canada and parts of the United States.

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6. ***Ceiling Tiles*** - Ceiling tiles must be certified as asbestos free. Due to other possible VOC emissions, it is recommended that ceiling tiles be installed prior to the 48 hour ventilation period.

H. Equipment

1. ***Ventilation*** - Proper exhaust systems must be installed in dark rooms, kiln rooms, duplicating rooms, spray booths, woodworking, industrial arts, laboratories, and kitchens. These ventilation systems should be included in pre-occupancy balancing reports and in the post-occupancy guarantee.

I. Mechanical

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1. ***HVAC Systems*** - Use the most current ASHRAE codes available. Refer to the Section on HVAC for further design requirements.

J. EMF

1. Prudent measure reducing exposure to high levels of electromagnetic fields will be conducted.

K. Water Testing - See page 33

CONTAMINANTS

Indoor Air Quality complaints require the evaluation of system operations and possibly testing to attempt to identify the source of the problem. The following are some possible school contaminants.

- A. **Combustion By-Products** arise from the incomplete oxidation of fuel products from unvented combustion heaters and appliances, vented appliances and equipment with faulty installations, welding, and automobile, truck, or bus exhaust entering buildings.

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1. The recommended daily action level for further investigation and remediation is (1/10 of the MIOSHA occupational health limit of 35 parts per million parts of air) 3.5 ppm. Carbon monoxide testing will be performed twice yearly in boiler rooms.
2. The two most prevalent oxides of nitrogen are nitrogen dioxide and nitric oxide. The recommended daily average action level for investigation of airborne concentrations is 10 mg/m₃ (milligrams per cubic meter of air) for nitric oxide (1/10 of the US National Ambient Air Quality Standard of 100 mg/m³) and 0.18 mg/³ for nitrogen dioxide (1/10 of the MIOSHA limit of 1.8 mg/m³).

- B. **Particles** include all particle sizes, measured as mass per cubic meter of air (mg/m³). Particle size is important because small particles can lodge in the lung and cause adverse reactions. The recommended action level for investigation and remediation of

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general respirable dust particle sizes from cleaning and renovation activities is $1\text{mg}/\text{m}^3$ (1/10 of the occupational MIOSHA health limit of $10\text{mg}/\text{m}^3$). Other important toxic dusts are discussed below.

1. ***Asbestos*** is a respirable dust composed of natural silicate fibers widely used in insulation and building materials until recently. As a guide, the District abides by the requirements of the Asbestos Hazard Emergency Response Act (AHERA) for control of asbestos in schools. This law sets specific training requirements and removal procedures when working or contacting asbestos material in schools.
 2. ***Lead airborne dust*** enters the body when an individual breathes airborne lead particles or swallows lead dust once it has settled. The recommended action level for investigation and remediation of airborne lead concentrations (1/10 of the MIOSHA occupational health limit of $50\text{ug}/\text{m}^3$) is $5\text{ug}/\text{m}^3$. The ***Lead Management Plan*** must be followed for disturbance of any lead containing surface material.
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3. ***Fiberglass*** is a respirable dust currently under intensive study regarding health effects. Protective gloves and clothing should be worn when working with fiberglass to minimize contact irritation. The use of fiberglass for insulation inside heating ducts must be prohibited. The recommended action level for investigation and remediation of respirable airborne fiberglass concentrations (1/10 of MIOSHA occupational health limit of $15\text{mg}/\text{m}^3$), is $1.5\text{mg}/\text{m}^3$.
 4. ***Environmental Tobacco Smoke (ETS)*** is a complex mixture of over 4,700 compounds including both gasses and particles from sidestream smoke from a burning tobacco product or smoke exhaled by the smoker. Smoking is prohibited at all district facilities at all times. It should be uniformly enforced. Please see Board Policies 3212, 4212 and 5512.
- C. **Biological Contaminants** include allergens (such as pollen, fungi, spores, insect parts and animal feces) and pathogens (such as bacteria and viruses). When airborne, these particles are usually attached to dust particles of all sizes so they are widely distributed.

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Rochester Community Schools will prevent contaminant-buildup by thoroughly drying non-porous surfaces and replacing porous carpeting and materials which are rain-water damaged. The District will keep schools clean with good regular housekeeping to minimize dust mites, pollen, and allergy-causing contaminants. All floor drains will be disinfected regularly. Adequate pore-sized dust filters will be used on all air intakes. Bioaerosal sampling will be undertaken only in cases where positive medical evidence exists for diseases related to humidifier fever, hypersensitivity pneumonitis, allergic asthma, or allergic rhinitis - no evidence exists to suspect microbial aerosols for other organ systems.

- D. Radon is a radioactive gas from the decay of Radium-226. Effective control measures include sealing all foundation and wall cracks contacting the soil and measuring radon concentrations to be sure more proactive sub-slab ventilation is not necessary. Radon levels are discussed separately with advice from the EPA about acceptable school levels.

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- E. Formaldehyde is a colorless, water-soluble gas widely used in construction materials, furnishings, and consumer products. Because irritation from formaldehyde commonly follows construction or renovation, the District will follow a proactive approach before product installation.
1. Carpets with no or low emission volatile organic compounds, should be used if available. Otherwise, carpets should be pre-treated by heating or steaming to accelerate off-gasing prior to installation. Low volatile solvent emitting adhesives should be utilized with installation. A 2-day or greater period of off-gasing for all carpeting with 100% outdoor air in a constant ventilation mode should occur prior to occupancy of a newly carpeted area.
 2. Pressed wood products should be of exterior grade plywood with the use of phenol-formaldehyde resin instead of urea-formaldehyde resin which emits formaldehyde at greater rates.
 3. Laminated products should have all surfaces covered, and all open, pre-drilled holes should be plugged.

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4. The use of formaldehyde-based products should be limited wherever possible, especially in science labs.

The recommended action level for investigation and remediation for formaldehyde (1/10 the MIOSHA occupational health limit of 0.75 ppm) is 0.08 ppm.

- F. A volatile organic compound (VOC) is any organic compound that exists as a “gas” or easily off-gasses at room temperature. Primary sources include paints, adhesives, solvents, cleaning fluids, wood preservatives, aerosol sprays, cleaners and disinfectants, air refreshers, hobby supplies, science labs, auto repair labs, welding areas, and copy machines. Since there are so many VOCs which may interact or accentuate each others’ hazards, it is recommended that the action level for known contaminant be maintained at 1/10 of their MIOSHA occupational health limit. Material safety data sheets

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(MSDSs) should be present on site for all chemical products introduced into Rochester Community School buildings, and these MSDSs should be consulted for information on product contents, occupational exposure limits, safe work practices, and spill cleanup.

- G. Polychlorinated biphenyls (PCBs) is a term designating over 200 organic compounds which are colorless liquids with a high degree of thermal and chemical stability and with excellent electrical insulating properties. CBs are health hazards with effects of skin rash, liver injury, and some cancer-related diseases. PCBs can be absorbed through the skin so no direct skin contact should be allowed with any electrical capacitors or transformers or old leaking fluorescent light ballasts. Primary electrical transformers that contain PCBs must be checked semi-annually and inspected for leaks. It is not anticipated that PCBs will be encountered except in maintenance work when personal protective equipment should be worn to eliminate skin contact.
- H. Control Action Plans to maintain good indoor air quality involve basic strategies. IAQ problems result from interactions between contaminant source, building site, building structure, activities within the building, mechanical equipment, climate, and occupants. Control methods that Rochester Community Schools will follow include:

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1. ***Source control*** - This most cost-effective approach includes:
 - a. Selection and identify products and materials that produce fewer or less toxic contaminants. Such material substitutions include latex paints instead of oil-based finishes, manufactured wood products without urea formaldehyde resins, water-based cleaning and maintenance products instead of solvent-based materials.
 - b. Relocate contaminant producing equipment to an unoccupied, better ventilated area.
 - c. Modify occupant activities inside a building.
 - d. Seal or enclosing some sources, like those that contain asbestos or lead or off-gas formaldehyde.

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- e. "Curing" manufactured products such as carpeting before installation by ventilating them in a warehouse to minimize off-gasing in the classroom.
 - f. Maintaining boilers and furnaces to minimize the emission of combustion products.
 - g. Modifying the environment by relocating bus drop off areas when they are near air intake vents.
 - h. Productively looking for potential roof leaks and if they occur, thoroughly drying water-soaked porous materials within 24 hours or discarding them. Clean non-porous surfaces with a 10% bleach solution to minimize pollen and mold entry and growth.
2. ***Ventilation improvements:***
 - a. Dilute contaminants with outdoor air presumed to be less contaminated (dilution ventilation).
 - b. Exhaust contaminated air at the source (local exhaust ventilation) in restrooms, labs, duplication equipment areas, kitchens, film dark rooms, and vocational and art classrooms.
 - c. Improve air distribution in rooms by proper placements of air supply and return vents.
 - d. Annually inspect and keep mechanical systems in good maintenance to achieve the designed airflow rates as much as possible.

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- e. Use maximum ventilation during short-term activities such as painting, stripping, sanding, or welding.
 - f. Avoid recirculation of air containing contaminants.
 - g. Make certain that school employees are informed and instructed to close doors where necessary to maintain ventilation zones designed for the building.
3. **Filtration** - Air cleaning is most effective when used with source control and ventilation. However, the District will utilize the highest filtration media possible within their ventilation units. In most cases this will be medium efficiency pleated filters.

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4. **Exposure control:**
- a. Contaminant producing activities where possible will occur during unoccupied building periods.
 - b. Susceptible individuals will be notified about upcoming events (i.e., roofing, painting, pesticide applications, etc.) so they can avoid contact with offending contaminants.
 - c. The District will try to relocate susceptible individuals away from the area when they experience symptoms.
5. **Education** - The District will inform and educate building occupants about the cause(s) of indoor air problems and the actions that need to be taken or avoid or minimize their exposure to contaminants.

The major remedial options for the District to improve air quality is to:

- Remove the contaminant, reduce its release, or contain the source.
- Increase exhaust ventilation or dilute the air pollutant with outside air.
- Check whether the ventilation system is maintained and operating properly and to design specifications.
- Retrofit the rooms or the building to meet current ventilation standards during remodeling (ASHRAE 62-1989).

RADON

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The Rochester Community School District Regulations for radon measurement in Schools will be:

A. Initial short term (2 day to 5 day) measurements will be performed in all frequently occupied ground and basement rooms during the coldest months (October through March) of the heating season. The 1996-97 school year will be the benchmark year for performing radon testing in all buildings.

1. If a short term test of 2 to 5 days is used, the tests should be conducted on weekdays with the HVAC system operating normally.

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2. Testing should be initiated immediately in rooms showing structural defects or cracks.

B. Any test results with radon levels greater than or equal to 4pCi/L will be considered an action level to perform further testing.

1. If the initial short term test result is only slightly above the 4 pCi/L (between 4 and 10 pCi/L), a long term follow-up measurement over the entire ten month school year will be performed to obtain the average radon level for the school year.
2. If the initial short term test result is 10 pCi/L or higher, a short term (2 to 5 day) follow-up measurement will be taken immediately.

C. If following a second test (or the average of the 2 tests) high radon levels of 4 pCi/L to 10 pCi/L are found, immediate diagnostic testing will be performed and a mitigation strategy will be developed to reduce the radon level to below 4 pCi/L.

If following a second test (or the average of 2 tests) high radon level of greater than or equal to 10 pCi/L are found, the occupants of the contaminated space will be removed until mitigation procedures have corrected the situation.

D. District wide retesting will be performed:

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1. Beginning in 2001, on a rotating basis, all buildings will be retested within 5 years (elementary schools and schools that required previous radon mitigation measures will be retested first).
2. Following any major renovations to the structure of a building or major alterations to a building's HVAC system. If elevated radon existed prior to renovations, radon-resistant techniques will be included as part of the renovation.

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- E. A copy of the content of this policy and tests results will be provided to each building site to inform parents and community members.
- F. The school administrator will be notified when it has been determined that a potential area of radon contamination requiring the relocation of students exists within a school building. This information will be shared with the faculty, staff, and parents through whatever means deemed appropriate by the school administrator.
- G. Any new facility construction or major renovation will follow guidelines as currently provided in the EPA document *Radon Prevention in the Design and Construction of Schools and Other Large Buildings*, Third Printing with Addendum, June 1994 (EPA 625/R-92/016) and as revised with any future recommendations or regulations.
- H. The Director of Facility Operations will be responsible for the implementation and follow through of this regulation.
- I. Rochester Community Schools personnel using radon testing devices which will be analyzed by an EPA Radon Measurement Proficiency listed service should receive training to introduce them to the major components of a building testing program.
- J. The proficiency of district personnel will be ascertained based on the EPA recommended guidelines using the EPA document, *Radon Measurement in Schools - Self Paced Training Workbook*, October

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1994, (EPA 402-B-94-001) or by on-site instructions provided by the Michigan Department of Consumer and Industry Services.

- K. All record keeping will follow EPA recommended guidelines as described in their documents 402-B-94-001 or 402-R-92-014 or as described in the EPA Radon Measurement Proficiency (RMP) Program whether performed by District personnel or a measurement service.

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- L. The District Environmental, Health and Safety Committee will review this policy and any updated pertinent regulations yearly and make appropriate recommendations for revisions.

COMPLAINTS

A. Filing a complaint

- 1. An Indoor Air Quality Complaint form will be utilized.

B. Response

1. Thermal Environment

- a. An initial response by building personnel will occur within two hours of notification.
- b. If the situation cannot be resolved with this step then the custodian must submit the proper work order to the Maintenance Department.
- c. Response from the Maintenance Department to do the work must occur within two weeks.

2. HVAC

- a. The staff member will obtain and file an Indoor Air Quality Complaint Form with the building administrator.
- b. A copy of the completed complaint form will be submitted to the head custodian.
- c. The head custodian will conduct a HVAC survey utilizing the HVAC Checklist - Short Form in a timely manner.
- d. If a problem is identified, a work order should be submitted to maintenance to resolve the problem. If the problem is not identified then a copy of the

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- complaint form and HVAC Checklist - Short Form should be submitted to the Facility Operations Office.
- e. An appropriate response will occur from the Facility Operations Office within two weeks.

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3. Complainant
 - a. The staff member will obtain and file an Indoor Air Quality Complaint Form with the building administrator.
 - b. A copy of the completed complaint form will be submitted to the head custodian.
 - c. The head custodian will conduct a survey and complete a Pollutant and Source Inventory Form in a timely manner.
 - d. If a problem is identified and cannot be resolved by building personnel or if the problem is not identified then a copy of the complaint form and Pollutant and Source Inventory Form should be submitted to the Facility Operations Office.
 - e. An appropriate response will occur from the Facility Operations Office within two weeks and medical documentation from a physician may be necessary to help identify and resolve the problem.

INTEGRATED PESTICIDE MANAGEMENT

In order to comply with the Michigan Pesticide Control Act, P.A. 171, the Rochester Community Schools will follow all rules and guidelines designated as applicable to any person applying any pesticide, insecticide, fungicide, herbicide, or rodenticide as a required. School employees, such as custodians, maintenance, and grounds personnel, that may use the above mentioned products are subject to this Act.

The Board has designated the Grounds & Maintenance Manager as the Compliance Officer to coordinate the District's compliance with Act 171.

A copy of this Act may be obtained from the Compliance Officer. Notice of this Office and a copy of this Policy will be published and circulated throughout the District.

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The Board has adopted the Pesticide Compliance Policy to insure the safe use and handling of the above mentioned products as well as to insure the health and well-being of our students, staff, and community.

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INTEGRATED PEST MANAGEMENT PLAN

“Integrated Pest Management (IPM)” is a pest management strategy that focuses on long term prevention or suppression of pest problems with minimum impact on human health, the environment, and non-target organisms. Preferred pest management techniques include encouraging naturally occurring biological control, using alternate plant species or varieties that resist pests, selecting pesticides with a lower toxicity to humans or non-target organisms; adoption of cultivating, pruning, fertilizing, or irrigation practices that reduce pest problems; or changing the habitat to make it incompatible with pest development. Broad spectrum pesticides are used as a last resort when careful monitoring indicates they are needed according to pre-established guidelines. When treatments are necessary, the least toxic and most target specific pesticides are chosen.

This plan accepts the fact that there will always be pests present on District sites. Given this fact, the goal is to manage the pest at a tolerable level to maintain a safe and healthy school environment.

The implementation of this plan shall be in compliance with all District policies, local, state, and federal laws or regulations.

The following steps will be adopted and followed as part of the Integrated Pesticide Management Plan:

- A. District Notifications
 - 1. The District will distribute written information regarding the Pesticide Policy to all employees. This information will include the designation of a Compliance Officer and other persons responsible for the implementation of the policy components.

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2. The distribution of written information regarding the Pesticide Policy will be made annually to all parents in the community as required by law.

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B. Pest Management

1. Detection - The District will carefully monitor sites for pests to prevent a major infestation.
 - a. Site Evaluation - Site evaluations are to be performed by State Certified Applicator(s) or Registered Technicians. Registered Technicians will work under the supervision of the Compliance Officer. These evaluations are to include the following (3) areas:
 - i. *Description of the site*
 1. Identify potential problem areas and make recommendations to correct these areas.
 2. Identify all sensitive areas associated with site as defined in State Regulation 637.
 - ii. *Inspection of site*
 1. Number of pests found or reported
 2. Identification of pest
 3. Conditions that are conducive to pest establishment
 - iii. *Monitoring of site*
 1. Monitoring is to be done on a weekly basis by the Custodial/Grounds staff.
 2. Additional monitoring will be done by the Compliance Officer.
2. Identification - The custodial supervisor will make a determination to make sure that the pest is really a problem.
 - a. Threshold Level - Threshold level is defined by the District as the level at which a pesticide application is

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necessary to manage the pest. This level cannot be

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reached without first exhausting all alternative solutions to the pest problem. These alternative solutions must have been proven effective by other school districts or government agencies in terms of cost and safety.

3. **Risk Significance** - The pesticide officer will determine at what level people or facilities at risk of being damaged from a specific pest.
4. **Method Selection** - The pesticide officer will choose the least toxic method to control pests.
 - a. **Pest Management Methods** - The underlying principle of this plan is to use the least toxic alternative first. All methods are to be evaluated by the Compliance Officer for cost effectiveness and safety before they are implemented. The following considerations to pest management are to be used:
 - i. ***Prevention*** - this will be achieved by pest habitat modification or elimination, i.e. caulking of cracks in walls and floors, modifying cleaning and storage practices, using different cleaning agents.
 - ii. ***Reduction*** - this will be achieved by using a combination of the following techniques: mechanical, biological, and chemical. Restricted use chemicals are only to be used if all other control measures have failed to work.
5. **Evaluation** - all treatments must be evaluated as to their effectiveness.

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- a. **Evaluation -The District recognizes its' responsibility to evaluate all aspects of this plan. The following steps to evaluation are to be used:**

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- i. **All components of this plan are to be evaluated by the Compliance Officer on a yearly basis.**
- ii. **All pest management methods are to be evaluated after every use.**
- iii. **These evaluations will be on permanent file at the building and Operations Office.**

C. Employer Practices

1. **The District will attempt to have a Certified Applicator or Registered Technician on staff.**
2. **The decision to apply any pesticides shall be made by the Compliance Officer in consultation with the District's Registered Technicians.**
3. **All pesticide applications shall be performed only by contracted or District personnel with a minimum license of Registered Technician in the appropriate category, and only with the knowledge of and under the supervision of the Compliance Officer.**
4. **Prior to providing any type of pest control service, all contracted personnel must have on file in the Operations Office, a current copy of his/her license (Registered Technician or Certified Applicator) demonstrating certification in the appropriate category. The file will be updated any time there is a change in the contracted employee's license and/or category certification. Failure of the Contractor to provide and maintain a current file for each contracted employee will prohibit that specific employee from providing any type of pest control service to the Rochester Community Schools.**

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5. All applications will comply with the following criteria:
 - a. Directions on pesticide label
 - b. All State and Federal laws
6. All applications must comply with standards and procedures outlined in the Rochester Community Schools Integrated Pest Management Plan. This plan is on file at the Operations Office and at the custodial office at each building.
 - a. Record-Keeping - The following steps are to be used in record-keeping:
 - i. All pest management methods that are used shall be recorded in a permanent file at the site and Operations Office.
 - ii. The appropriate Rochester Community Schools application record form must be used.
 - a. Pest Management Checklist - IPM #1
 - b. Exterior Record Form - IPM #2
 - c. Indoor Record Form - IPM #3
 - iii. Upon written request to the Operations Office, records shall be made available to the public.
7. The District will keep a current inventory of all chemicals used for pesticide applications, as well as a current copy of the material safety data sheet.
8. The District will provide the proper supervision and training of all employees required to use pesticides as part of their job assignments.

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D. Application Practices

- 1. All requests regarding the Pesticide Compliance Policy will be processed through a work order system within the Compliance Officer's jurisdiction.**
- 2. The Compliance Officer will determine the proper method of handling each request and the urgency of the request.**
- 3. The job will be scheduled at such time when the least number of people are affected.**
- 4. Building Administrators will be advised of the job schedule and completion of all work requests.**
- 5. Parents who request notification before pesticide applications will have it provided.**
- 6. Any decision to employ an outside contractor that falls under this policy by building administrators, staff, PTA/PTO, must receive approval from the Compliance Officer. This is to include all lawn fertilization companies as well as pest control companies.**

E. Pest Management Checklist

The District's Pest Management Checklist must be used by anyone requested to perform pest management. This form must be completed before every pesticide application. A copy of this document must be attached to the pesticide application record.

UNDERGROUND STORAGE TANKS

- A. The Rochester Community Schools is committed to ensuring all Districts sites utilizing underground storage tanks comply with all Federal and State regulations dealing with their use. In addition, the Rochester Community Schools will make every reasonable effort to reduce or eliminate the need to store hazardous products**

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underground. As part of this effort, the District will do the following:

- 1. Any underground storage tank will be monitored and tested yearly according to UST Regulatory Act 423 of 1988. Test results will be kept on file at the facility office and be used to assess the tanks viability for use.**
- 2. Any leakage of free product into the surrounding ground mass will be assessed and cleaned in accordance with state rules and regulations governing leaking underground storage tanks.**
- 3. If an emergency situation arises concerning an underground storage tank where free product has leaked into the surrounding ground mass, action will be taken according to Michigan State Rules and Regulations, Leaking Underground Storage Tank Act 478, 1988.**
- 4. The Facility Operations Department and the Transportation Manager shall assist in preparing annual and separate budgets to handle the financial aspect of maintaining underground storage tanks. Part of this budgeting process will be to upgrade existing tanks to provide funds to meet new state regulations dealing with underground storage tanks.**
- 5. It is recommended that as a long range goal, the use of underground storage tanks be eliminated in favor of alternate storage methods. This can include above ground storage tanks, off site fueling and the use of alternative clean fuels.**
- 6. The Transportation Manager and a representative of the facility operations department will receive instruction on regulations dealing with underground storage tanks, leaking underground storage tanks and hazardous materials storage.**

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7. **New employees and maintenance staff will be made aware of regulations concerning UST's, records that must be kept, and the reasons for these records. Included in their orientation should be:**
 - a. **Correct way of fueling**
 - b. **Procedures for adding and taking from tanks**
 - c. **What to do in case of a spill**

8. **The Facility Operations Department and the Transportation Supervisor shall be responsible for testing and maintaining records pertaining to underground storage tanks.**

WATER TESTING

There are two (2) components of water testing that are appropriate for assuring safe drinking water for building occupants at Rochester Community Schools. These are: testing the water supply of facilities that are supplied by wells, and testing systems supplied by municipal systems after renovations of a major nature have been completed.

To remain proactive and to provide a higher degree of safety for building users, the Rochester Community Schools will exceed public policy with regards to testing drinking water at District owned/leased facilities. At a minimum, the following precautions and procedures will be followed for all facilities.

A. **Construction**

Upon completion of any District construction project involving changes to the buildings domestic water supply, the system shall be first flushed of any construction debris, treated with chlorine and then tested to detect the presence of lead, copper or coliform bacteria. Testing shall be done prior to occupancy and levels shall not exceed the guidelines as established by the State of Michigan's Division of Water Supply, Bureau of Environmental and Occupational Health.

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1. **Lead:** A statistical determined number of samples will be taken and analyzed according to the sampling protocol as stated in Public Act, 1976, 399. The action level for lead from municipal supplied water sites will coincide with the level required by the Michigan Department of Environmental Quality well supplied sites. The standards as established are: Less than or equal to .015 micrograms per liter (mg/l) of lead for 90% of the samples taken.

If the action level is exceeded on 10% of the samples taken, a flushing procedure will be established for the site. Re-sampling will occur every six months until the results are below the action level. Once the results reveal the site to be in compliance, no further sampling will be required unless changes occur to the water distribution lines.

2. **Copper:** The samples which are taken to determine the level of lead in municipal supplied water systems shall also be tested for copper. An action level of 1.3 micrograms per liter (1.3ug/l) will be established for copper. If the action level is exceeded by 10% of the samples taken, a flushing program will be instituted. Re-sampling will occur every six months until the results are below the action level. Once the results reveal the site to be in compliance, no further sampling will be required unless water distribution lines are significantly altered.
3. **Coliform Bacteria:** Normally, coliform bacteria testing is used as an indicator of the sanitary quality of drinking water for well supplied sites. Coliform bacteria are present in human and animal waste and can indicate the potential for other harmful diseases. Usually sites with municipal supplied water would not have any bacteria present due to water purification treatments. Treating the system with chlorine as required in step A will kill the bacteria. However, due to the possibility contractors could install water or sewer lines incorrectly, Rochester Community Schools will require

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sampling for coliform bacteria before occupancy is permitted. At least one sample shall be taken and the tap selected shall be closest to the end of the run. If any coliform

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bacteria is present, the system shall be inspected, flushed and re-tested to find the cause. A re-test will be performed by the end of one month and testing will continue until no coliform bacteria is present.

UNDERGROUND WELL SYSTEMS - NON COMMUNITY SYSTEMS

- A. Rochester Community School facilities which are supplied by underground well systems will have their water supplies tested in accordance with Michigan Department of Public Health's requirements Act 399. The schedule for these tests and testing parameters are delineated in Michigan Department of Public Health's publication "Drinking Water Monitoring for Non Transient Non Community Public Water Supplies, Authority 399, P.A. 1976". As indicated in this publication, all well supplied facilities will follow the appropriate test schedule. The Facility Office will make results available to each building.
- B. Well systems will be tested on a regular basis for: coliform, nitrites, nitrates, pesticides, synthetic organic compounds, volatile organic compounds, lead, copper, complete metals, and cyanide. Testing shall only be analyzed through a Michigan Department of Environmental Quality accredited laboratory. Rochester Community Schools will adopt action levels as established by the Michigan Department of Environmental Quality as the criteria to initiate remedial action. In addition, a copy of all sample analysis will be forwarded to the Oakland County Health Department and site administrators.

Approved: August 12, 1996

Revised: October 20, 2009

APPENDIX: GLOSSARY, ABBREVIATIONS, AND ACRONYMS

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Acetone Chemicals found as in cleaners, personal care products, and tobacco smoke.

AC The abbreviation for alternating current. An AC current, or field, changes strength and direction in a rhythmically

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repeating cycle

ACH	Air changes per hour
ACGIH	American Conference of Governmental Industrial Hygienists
ACM	Asbestos containing material
AHERA	Asbestos Hazard Emergency Response Act
Air Cleaning	An IAQ control strategy to remove various airborne particulates and/or gases from the air. The three types of air cleaning most commonly used are particulate filtration, electrostatic precipitation, and gas sorption.
Air Exchange Rate	Used in two ways: 1) the number of times that the outdoor air replaces the volume of air in a building per unit time, typically expressed as air changes per hour; 2) the number of times the ventilation system replaces the air within a room or area within the building.
Allergens	Biological material, bacteria, viruses, fungi, mold spores, pollens, and insect parts are ubiquitous in indoor environments. These particulates range from less than one to several microns in size. When airborne, they are usually attached to dust particles of various sizes so that all sizes of airborne particulates may include them.
Amp	The units used to measure current. Abbreviated A
ANSI	American National Standards Institute
Antimicrobial	Agent that kills microbial growth

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Aromatic hydrocarbons	Compounds found in combustion processes, paint, solvents, tobacco smoke
Asbestos	Composed of small natural mineral silicate fibers. Included in the definition are chrysotile, crocidolite, amosite and the fibrous varieties of anthophyllite, tremolite and actinolite.
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers

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ASTM	American Society of Testing and Materials
Benzene	Aromatic compound found in combustion processes, gasoline, solvents, tobacco smoke.
Biological Contaminants	Agents derived from or that are living organisms (ex. viruses, bacteria, fungi, and mammal and bird antigens) that can be inhaled and can cause many types of health effects including allergic reactions, respiratory disorders, hypersensitivity diseases, and infectious diseases.
Biomatter	Organic matter such as dandruff, hair, parts of insects, and skin
BOCA	Building Officials and Code Administrators
Carbon Monoxide	CO is a colorless, odorless, and tasteless gas. It results from incomplete oxidation of carbon in combustion.
Carbon Dioxide	CO ₂ is an odorless, tasteless and colorless product of completed carbon combustion. It is also a normal by-product of human respiration
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act or "Superfund"
CFM	Cubic feet per minute
Charge	The electrical property of matter which is responsible for creating electrical fields. Electric fields begin on positive charges and end on negative charges.
Chlorinated Hydrocarbons	PCB's, wood preservatives, solvents
Coliform Bacteria	Type of bacteria used as an indicator of the sanitary quality of drinking water
Compliance Officer	Person responsible for managing the Integrated Pest Management Plan threshold level

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Conditionally exempt small quantity generator	A generator who generates less than 100 kilograms (220 pounds) of hazardous waste in a single month and who never accumulates in excess of 1,000 kilograms of hazardous waste
Conditioned Air	Also recirculated air. Air that has been heated, cooled, humidified, or dehumidified to maintain an interior space within the thermal environment conditions
CPSC	Consumer Product Safety Commission
Current	An organized flow of electrical charge. Current in a power line is analogous to the rate of fluid flow in a pipeline. All currents produce magnetic fields. Currents are measures in amps
Dampers	Controls that vary airflow through an air outlet, inlet, or duct. A damper position may be immovable, manually adjustable, or part of an automated control system.
Disinfectant	One of three groups of antimicrobials registered by EPA for public health uses. EPA considers an antimicrobial to be a disinfectant when it destroys or irreversibly inactivates infectious or other undesirable organisms, but not necessarily their spores. EPA registers three types of disinfectant products based upon submitted efficacy data: limited, general or broad spectrum, and hospital disinfectant.

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Distribution Line	A power line used to distribute power in a local region. Distribution lines typically operate at voltages between 5 and 35 kV, much lower than the voltages of transmission lines. However, the current on some distribution lines can be comparable to transmission line currents
Dose	The amount of exposure of a kind that produces effects. In the case of chemical pollutants, dose is usually the amount of chemical that gets into the body. In the case of fields, it is often unclear what aspect of the field, if any, is involved in producing effects. Hence, it is not clear how to measure

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dose from electromagnetic fields

Electric Field	A representation of the forces that fixed electrical charges exert on other charges at a distance. The electric field has a strength and direction at all points in space which is often represented diagrammatically by field lines.
Electric Fields	Electric field lines begin on positive charges and end on negative charges
Electromagnetic Fields (EMF) fields	A field made up of a combination of electric and magnetic fields
Epidemiology	The study of the distribution and factors that cause health related conditions and events in groups of people, often making use of statistical data on the incidence of diseases or death
EMS	Energy Management System
EPA	Environmental Protection Agency
ETS	Environmental tobacco smoke - It is a complex mixture of 4,700 compounds including gases and particulates from sidestream burning tobacco product or smoke exhaled by the smoker.
Exhaust Ventilation	Mechanical removal of air from a portion of a building (e.g. piece of equipment, room or general area).
f/cm³	Fibers per cubic centimeter
fpm	Feet per minute
Fiberglass	Is a man-made fiber used primarily for insulation purposes. Its respirable dust is under intensive study regarding health effects.
Formaldehyde	Colorless water soluble gas. Due to its wide use, it is frequently considered separately from other volatile organic compounds (VOC'S). Formaldehyde has been known to cause eye, nose and throat irritations, skin rashes and severe allergic reactions along with cancer.

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Fungicide	Chemicals or agents used to eliminate or reduce unwanted fungi
Gauss	A common unit of measure for magnetic fields. Abbreviated G. There are 10,000 gauss in one tesla
Gas Sorption	Devices used to reduce levels of airborne gaseous compounds by passing the air through materials that extract the gases. The performance of solid sorbents is dependent on the airflow rate, concentration of the pollutants, presence of other gases or vapors and other factors.
HEPA	High efficiency particulate arrestance (filters)
Herbicide	Chemical or agent used to reduce or eliminate unwanted plant life
Hertz (Hz)	A cycle per second. A unit used to measure frequency. In America, AC power has a frequency of 60 Hz. In most of Europe, AC power has a frequency of 50 Hz. Radio waves have frequencies of many thousands or millions of hertz. Hz is the abbreviation for hertz
HVAC	Heating, ventilation, and air conditioning system
Hypersensitivity disease	Diseases characterized by severe allergenic response to antigens. The hypersensitivity diseases most clearly associated with indoor air quality is asthma, and rhinitis.
IAQ	Indoor air quality
IPM	Integrated Pest Management
Insecticide	Chemical or agent used to eliminate or reduce unwanted insects
kV	The abbreviation for kilovolt. A thousand volts
Lead	Naturally occurring element which has been used in soldering copper pipes, making brass fixtures and an agent

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in paint products

Leukemia A general word used to refer to a number of different types of cancer of the blood forming tissues.

Low volatile solvent emitters Are defined by the Environmental Protection Agency

LUST Leaking underground storage tank

Magnetic Field A representation of the forces that a moving charges exerts on other moving charges, because they are moving. The magnetic field has a strength and direction at all points in space which is often represented diagrammatically by field lines. Magnetic field lines form closed continuous loops around currents. All currents produce magnetic fields

MIOSHA Michigan Occupational Safety and Health Association

mg/m³ Milligrams per cubic meter

MSDS Material Safety Data Sheet

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NESHAP National Emissions Standards for Hazardous Air Pollutants

Negative Pressure Condition that exists when less air is supplied to a space than is exhausted from the space, so the air pressure within the space is less than that in the surrounding areas.

NIOSH National Institute for Occupational Safety and Health

Nitrogen Oxides The two most prevalent oxides of nitrogen are nitrogen dioxide (NO₂) and nitric oxide (NO). Both are toxic gases with NO₂ being a highly reactive oxidant, and corrosive. NO gradually reacts with the oxygen in the air to form NO₂.

OSHA Occupational Safety and Health Administration

Pesticides Chemical or agent used to eliminate or reduce unwanted animals

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Phase	The timing with which an alternating current, voltage or field is changing strength and direction
PM	Preventative maintenance
Positive Pressure	Condition that exists when more air is supplied to a space than is exhausted, so the air pressure within that space is greater than in surrounding areas.
PCB's	Polychlorinated biphenyls refer to over 200 organic compounds which are colorless liquids with a high degree of thermal and chemical stability and with excellent electrical insulating properties.
Picocuries	(pico = one trillionth) A unit quantity of any radioactive nuclide in which 3.7×10^{10} disintegration's occur per second.
ppm	Parts per million
Prevention	All efforts undertaken to lessen the change of exposure
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Promoter	Any agent, such as some chemicals, which can aid or accelerate the growth of cancer
Radon	A radioactive gas, the first decay product of radium-226. It decays into solid alpha emitters which can be both inhaled directly or attach to dust particles which are inhaled. The unit of measure for radon is Picocuries per liter (pCi/L).
Redecoration	A project of smaller scope than a renovation and not requiring an enclosure (i.e., room painting or replacing carpeting)
Reduction	Measurable lessening of environmental hazards
Remodeling	A project requiring an enclosure, which includes sealing the HVAC system and use of negative pressure
RCS	Rochester Community Schools

REGULATION

Rochester Community Schools
Rochester, Michigan 48307

Rodenticide	Chemical or agent used to eliminate or reduce unwanted rodents.
Routine Maintenance	Projects of a smaller scope than redecoration and considered routine in nature (i.e., painting door frames, replacing tiles)
School in Session	Any time staff and students occupy the facility
Threshold Level	Lowest level at which a stimulus becomes harmful to humans
ug/m³ um	Micrograms per cubic meter Micrometer
UST	Underground storage tank

Glossary
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Ventilation Air	Defined as the total air, which is a combination of the air brought into the system from the outdoors and the air that is being recirculated within the building.
Volatile Organic Compound (VOC)	Chemical compounds that evaporate from the many maintenance, and building products made with organic chemicals. These compounds are released from products that are being used and that are in storage. In sufficient quantities, VOC's can cause eye, nose, and throat irritations, headaches, dizziness, visual disorders, memory impairment; some are suspected of causing, or are known to cause, cancer in humans. At present, not much is known about what health effects occur at the levels of VOC's typically found in public and commercial buildings.