

“Tools for Techs”

Checklists for Technical High Schools

(a supplement to the EPA’s Tools for Schools Checklists)



Developed through a cooperative relationship among the Connecticut Department of Public Health, the Connecticut School Indoor Environment Resource Team, the Connecticut Technical High School System, the State Vocational Federation of Teachers/ American Federation of Teachers, and the Occupational and Environmental Health Center at UCONN Health Center.

The “Tools for Techs” Team Members:

- | | |
|------------------------|--|
| <i>Anne Bracker</i> | <i>UCONN Health Center</i> |
| <i>Kenny Foscue</i> | <i>Connecticut Department of Public Health</i> |
| <i>Rick Tanasi</i> | <i>State Vocational Federation of Teachers</i> |
| <i>Iris White</i> | <i>American Federation of Teachers (AFT) Connecticut</i> |
| <i>John Woodmansee</i> | <i>Connecticut Technical High School System</i> |

Address correspondence about the checklists to:

Anne Bracker, MPH CIH
 UCONN Health Center
 263 Farmington Ave.
 Farmington, CT 06030-6210
 bracker@nso.uchc.edu

Index

Background and Introduction.....	3
The Checklists	4
Automotive Collision Repair and Refurbishing.....	5
Automotive Technology	8
Carpentry	10
Culinary Arts	13
Electronics	15
Graphic Arts, Printing and Photography.....	17
Hairdressing Cosmetology and Barbering.....	20
Heating, Ventilating and Air Conditioning (HVAC)	22
Manufacturing Technology	24
Masonry	26
Plumbing.....	28
Welding.....	30
The Checklist Summary	32

Background and Introduction

Connecticut has seventeen Technical High Schools and three Technical education centers. Over 1200 teachers and staff work in these schools and approximately 11,000 students are enrolled. Technical schools are essentially mini industrial complexes because the classrooms (shops) are devoted to teaching trades. Carpentry, plumbing and Heating Ventilating and Air Conditioning (HVAC) shops may be found on one wing of a Technical High School. Another wing may be devoted to teaching automotive technology, culinary arts and hairdressing/cosmetology/barbering. Potential chemical emissions include metal fumes from the Welding shop; combustion products from the Culinary Arts kitchen or the Automotive Technologies, HVAC or Plumbing shops; wood dust, and lacquer vapor from the Carpentry shop and acrylates and solvents from the Hairdressing/Cosmetology/Barbering classroom. The indoor air quality in the shops and the neighboring classrooms and offices may decline if these chemical exposures are not carefully controlled.

In addition to the secondary exposures associated with emissions from the trades, the academic classrooms in Technical High Schools have many of the same indoor air quality problems found in other schools. Technical High Schools need training on topics such as reducing the risk factors associated with microbial growth; enhancing the effectiveness of classroom ventilation systems and minimizing exposure to construction emissions if a building is occupied when renovation activities are scheduled. The EPA's Tools for Schools Teachers' Checklists address these issues and should be completed as well.

Under the Environmental Protection Agency's Tools for Schools (TfS) model multidisciplinary building teams use checklists completed by teachers and the observations made during walkthrough surveys to develop and prioritize recommendations that will improve the indoor air quality in schools. Due to the unique nature of the activities in the shops at the Technical High Schools, this packet of additional checklists was developed to address the specific indoor air quality challenges associated with many of the trades in Technical High Schools (as well as many traditional high schools).

The checklists are designed to help you evaluate the effectiveness of the controls used in the shops. A "no" response requires further attention. The checklists do not address safety hazards. The checklists are organized according to a "hierarchy of controls".

Hierarchy of Controls

Product Substitution	Is the shop free of toxic chemicals? Are there safer alternatives available?
Local Exhaust Ventilation/ Engineering Controls	Is the emission generated by the task pulled away from the breathing zones of the students and teachers with hoods, ducts and fans? Do these exhaust systems work? The school's building team will use a smoke pencil to evaluate the effectiveness of the local exhaust systems. 
Workpractices and Training	Do students and staff observe good work practices that will minimize their exposure to chemicals?
Protective Equipment	Do students and staff wear the appropriate protective equipment when there is a likely skin or eye exposure? In rare cases, respiratory protection may be recommended as well.
Dilution Ventilation	Is there a functional dilution ventilation system that brings outside air into the shop?
Pollutant Pathways	What happens to the emissions generated by the shop? Is there a pathway between the shop and the schools' other classrooms and offices? The team will address this issue during their walkthrough

There are many chemicals used in Vocational Technical Schools. Always check the products' labels and Material Safety Data Sheets (MSDSs) for information on the chemicals used at your school. Some shops have a chemical smell. Some chemicals cause harm before you can smell them. Other chemicals can be smelled well before they represent a hazard. For this reason, a shop's chemical odor can not be used to determine if the environment is safe. The best approaches to controlling exposures are reviewed in the checklists.

The “Tools for Techs” Checklists

Automotive Collision Repair and Refurbishing Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Autobody work involves the use of flammable liquids and powders. Although this checklist does not address safety hazards, schools should eliminate sources of ignition and observe approved operations and maintenance procedures within 20 feet of a spray or storage area to prevent a fire or explosion.

Use the checklist to assess the status of the following indoor air quality control measures:

A “no” response requires further attention. The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
If the shop uses clearcoats or primers that have isocyanates, the isocyanates are prepolymerized (they have already chemically reacted) and the hexamethylene diisocyanate (HDI) monomer content of the product is very small.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automotive paints are free of lead and hexavalent chromium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Only solvents with flashpoints greater than 100°F are used to clean spray guns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

Paint spray booths are used for <u>all</u> spray applications of flammable liquids or powders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Small Paint Spray Booths			
The booth’s exhaust system pulls vapors and mist away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The air is exhausted out of the building and is not re-circulated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dry filter booths have visible gauges or audible alarms that indicate when the filters need to be changed because of a build up of overspray	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The exhaust system is operated during spraying and for a sufficient time afterward to allow vapors from drying to be exhausted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk-in Paint Spray Booths			
Walk-in spray booths have a down draft ventilation system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk-in spray booths have a semi-down draft or cross draft ventilation system and the parts to be sprayed are oriented so that paint overspray is directed at the front of the booth and away from the student	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The air is exhausted out of the building and is not re-circulated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dry filter booths have visible gauges or audible alarms that indicate when the filters need to be changed because of a build up of overspray	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The exhaust system is operated during spraying and for a sufficient time afterward to allow vapors from drying to be exhausted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The walk-in spray room has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Storage Room			
Flammable paints and coatings are stored in a room with an exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the air is exhausted to the outside and is not re-circulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chemical Mixing			
Paints and coatings are mixed in a well vented area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drying			
Car parts or vehicles dry in a well vented area, ideally the spray booths themselves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repair, body work (including dry sanding) and frame straightening			
Repair, body work and frame straightening are done in a well vented area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use vacuum sanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welding			
The welding area has a local exhaust ventilation system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the exhaust system pulls welding fume and gases away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the local exhaust systems is maintained with a preventive maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training:

	Yes	No	NA ?
Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Only the paints, coatings and solvents that are to be used for the day's class are kept in the instructional area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flammable and combustible liquids are stored in closed containers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All solvent or paint soiled rags are placed in approved self closing metal containers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use high-volume low-pressure (HVLP) spray painting guns (These spray painting guns are more efficient that conventional spray painting guns)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For smaller parts, a "lazy susan" is used to rotate the part so that the paint is sprayed into the booth <u>not</u> toward the student. For larger vehicles, paint overspray is directed away from the student.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Only one student spray applies coatings in a walk-in booth at one time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students avoid using compressed air to remove paint dust from car surfaces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment:

Supplied air respirators are used when paints are applied inside a walk-in spray booth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the air supplied meets all the requirements for clean breathing air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the respirators are cleaned and stored appropriately	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fitted half face or full face air purifying respirators with cartridges for organic vapor and dust/mist prefilters are used inside walk-in spray booths when air supply respirators are not feasible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... there is a cartridge change out procedure to avoid “break through”	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the respirators are cleaned and stored appropriately	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fitted disposable dust masks or half face air purifying respirators with dust filters (“N95”) are used during dry sanding when vacuum sanders are not available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the respirators are cleaned and stored appropriately	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation:

The shop has a supply of “make up” air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Automotive Technology Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A “no” response requires further attention. The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
Brake cleaners are chlorine free	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff insures that all brakes to be worked on are asbestos free	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parts cleaners are free of chlorinated hydrocarbons and have flash points > 100°F.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

Vehicles' exhaust pipes are always connected to an extraction system if a vehicle is idling in the shop.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes....the exhaust system pulls combustion products away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a carbon monoxide alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes....the carbon monoxide alarm is interlocked with a purging exhaust fan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brake work is done with the brake drum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depending on the quantity, flammable materials (eg: gasoline) are either stored in a flammable storage cabinet or in a flammable storage room with an exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes....the flammable storage room air is exhausted to the outside and is not re-circulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The local exhaust systems are maintained with a preventive maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop area is inspected for the presence of flammable or combustible materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

Students and staff wear the appropriate eye protection, coveralls and gloves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	--------------------------	--------------------------	--------------------------

5. Dilution Ventilation

	Yes	No	NA ?
The ceiling height in the automotive shop is high enough to allow for adequate dilution of shop emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows in the shop can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make up air(if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Carpentry Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A "no" response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
The shop is free of wood that has been treated with arsenic preservatives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop is free of Western Red Cedar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The use of particle board, fiberboard and composite material is limited in an effort to reduce the amount of binder released into the air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop is free of carpenters glues or adhesives that contain isocyanates, cyanoacrylates and/or formaldehyde.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

The woodworking machines have a local exhaust ventilation system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.....the exhaust system pulls wood dust away from the students  (note the woodworking machines evaluated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust system is updated when new equipment is added.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust system "gates" are closed when equipment is not in use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the hoods (duct inlets) are located within 8 inches of the "point of operation".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
there is a minimal amount of wood dust on the floor or surfaces near the woodworking equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust ducts are free of unnecessary turns and right angle bends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building and collected in dust collectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes...the dust collector is emptied when it becomes full.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

the air is returned to the classroom after passing through bag filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... these filters are changed regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use vacuum sanders and/ or downdraft tables when sanding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The local exhaust systems are maintained with a preventative maintenance program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The finishing room, is well ventilated during work involving adhesives, wiping stains and/or laminate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

	Yes	No	NA ?
Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wet methods and shop vacuums are used to clean the floor or surfaces (as opposed to compressed air or dry sweeping)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The woodworking machines' dust collector is emptied off hours by faculty or staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the dust collector is emptied off hours by faculty or staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flammable chemicals (eg: Stains, shellacs, lacquers, thinners and strippers) are stored in a flammable storage cabinet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students brush or wipe on stains, lacquers and thinners and are instructed not to spray apply these flammable chemicals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

If dust levels cannot be controlled (for example, when emptying the dust collector), fitted air purifying respirators with dust filters (N95 or better) are worn.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	--------------------------	--------------------------	--------------------------

5. Dilution Ventilation (for the woodworking shop and the theory room)

Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Culinary Arts Checklist

(modified from the EPA's Tools for Schools' Food Service Checklist)

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A "no" response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
General purpose cleaners are carefully evaluated and selected with an eye toward "green" products. Green Cleaners are environmentally safe cleaning products. These products have been certified to meet performance, health, safety and environmental standards by third parties such as "Green Seal". (http://greenseal.org)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kitchen staff know when and where to use disinfectants or sanitizers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disinfectants and sanitizers are not used as general cleaners. They are used only in areas where they are necessary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When disinfection or sanitation is required, the least toxic EPA registered antimicrobial is used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where possible, hydrogen peroxide based products are used as an alternative to chlorine bleaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where possible, quaternary ammonium compounds are used as an alternative to phenols or chlorine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Products containing quaternary ammonia, monoethanolamine, rosin and chlorhexidine have been associated with asthma. If these products must be used, staff have been instructed to handle these products with care.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff are not permitted to bring in cleaning products from home- only the schools' approved cleaners are used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

Hoods are used whenever students cook on stove tops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the hoods' exhaust fans operate properly 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the hoods are maintained with a preventive maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All gas appliances are vented outdoors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All gas appliances function properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The kitchen has a carbon monoxide monitor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Dumpsters are located away from air intake vents, operable windows and food service doors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moisture is controlled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hoods capture the steam generated during cooking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dishes are washed in a closed loop system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Determined that there are no signs of ceiling, plumbing, dishwasher or refrigerator leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Determined that there are no signs of microbial growth (eg mold) on the walls, the ceiling, under the sinks or in refrigerator condensate pans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

	Yes	No	NA ?
Cleaners and disinfectants are diluted appropriately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dispenser systems are used to pre-measure the correct amount.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Products are dispensed as a "stream" instead of a spray. This reduces the amount of chemical that gets in the air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students and staff have been trained never to mix bleach and ammonia- it makes a poisonous gas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Determined there are no signs of insect or vermin in the kitchen or storage areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food preparation, cooking and storage areas are cleaned routinely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leftovers and open containers are stored in well-sealed containers with no traces of food on outside surfaces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school has an integrated pest management program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy duty cleaning activities (fryolator cleaning, floor cleaning) are scheduled of hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivery vehicle drivers are instructed to shut off their engines during deliveries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

Students and staff wear rubber gloves when washing dishes or cleaning surfaces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------

5. Dilution Ventilation

The kitchen has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students cook, clean and wash dishes in a well-ventilated area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Electronics Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A "no" response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
Students use lead-free solder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The products used to clean surfaces before or after soldering (if necessary) are free of chlorinated hydrocarbons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

Soldering iron temperatures range from 620° - 700° F. The solder is not heated to extreme temperatures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soldering is done in a well-ventilated area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The soldering work areas have a local exhaust ventilation system or tip extraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes...the exhaust pulls solder and flux emission away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust hoods are located within 8 inches of the soldering task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building or into an air filtration unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... the filters in the air filtration unit are changed regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When rosin core solder is used the rosin pyrolysis products are kept to levels that are as low as possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Etchants are used in a well ventilated area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Soldering work areas are kept clean and wiped with a damp towel to minimize the presence of metal dust in the work area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food is not permitted in the soldering work area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After soldering, students wash their hands before eating, drinking or smoking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

Students and staff wear gloves, safety glasses/goggles when they use corrosive etchants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------

5. Dilution Ventilation

	Yes	No	NA ?
The ceiling height in the classroom is high enough to allow for adequate dilution of soldering emission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Graphic Arts, Printing and Photography Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

The checklist does not address safety hazards.

A "no" response requires further attention. The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
In the Print Shop			
Fountain Solutions and Blanket washes are free of ethylene based glycol ethers such as ethylene glycol monomethyl ether or ethylene glycol monoethyl ether	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

In the Print Shop			
The Offset Printing Presses have a local exhaust ventilation system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the exhaust system pulls vapors away from the students. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
this air is exhausted out of the building.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
this air is returned to the classroom after passing through charcoal filters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the charcoal filters are changed regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Plate Maker is completely enclosed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Print Shop has a supply of make up air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the Dark Room			
Negatives are developed with a completely enclosed process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The classroom has a supply of makeup air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The darkroom has a local exhaust system ventilation system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the exhaust system pulls film processing emission away from the students. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted to the outside and is not re-circulated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the dark room has a supply of make up air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical mixing area has local exhaust ventilation (not a canopy hood).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The local exhaust systems are maintained with a preventative maintenance program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Students use very small quantities of chemicals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the Print Shop			
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Materials covered in ink and solvent are discarded in safety cans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Containers are closed when not in use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the Dark Room			
Students rinse their print trays, tongs, and beakers with clean running water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Containers and photography trays are closed or covered when not in use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All photo processing powders and concentrated solutions are mixed by trained staff.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff add acid to water, NEVER THE REVERSE.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whenever possible, staff use pre-mixed chemicals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

	Yes	No	NA ?
Students and teachers wear goggles, aprons and gloves when they work in the darkroom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
An emergency eye wash station is located in the dark room.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation

In the Print Shop			
Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... outside air is flowing into the unit ventilator. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the Dark Room			
The dark room is well ventilated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Hairdressing, Cosmetology and Barbering (HCB) Checklist

Name: _____ School: _____

Room #/ Name of Shop: _____ Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

The checklist does not address safety hazards.

HCB classrooms frequently have a chemical smell. Some chemicals cause harm before you can smell them. Other chemicals can be smelled well before they represent a hazard. For this reason, a classroom's chemical odor can not be used to determine if it safe. The best approaches to controlling exposures in HCB classrooms are included in this checklist. A "no" response requires further attention.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
Acrylic nail products are free of liquid methyl methacrylate (MMA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nail polishes are free of formaldehyde and phthalates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nail polish removers are free of acetone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shampoos are free of formaldehyde	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hair dyes are free of "coal tar pitch volatiles"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

The manicure tables have a built-in local exhaust ventilation system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.....this exhaust system pulls dust and vapors away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
this air is exhausted out of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
this air is returned to the classroom after passing through charcoal filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... these filters are changed regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical mixing area has a local exhaust ventilation system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... this exhaust system pulls dusts and vapors away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
this air is exhausted out of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The clothes drier is vented to the outside of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depending on the quantity, flammable materials (eg: hair sprays, acetone) are stored in a flammable storage cabinet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The classroom has a supply of makeup air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The exhaust systems are maintained with a preventative maintenance program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	--------------------------	--------------------------	--------------------------

Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The instructor minimizes the amount of time spent working with artificial nail systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The instructor minimizes the amount of time spent working with permanent wave solutions, permanent hair dyes and hair sprays	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are encouraged to avoid the use of aerosol sprays Pump sprays and wet styling aids are used instead	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Materials soaked with chemicals are discarded in covered containers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Product containers are closed when not in use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are taught not to mix peroxide with bleach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

	Yes	No	NA ?
Students and staff can elect to use fitted disposable "dust masks" such as the "N95" when they file or grind nails (in preparation for artificial systems)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation

Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Heating Ventilating and Air Conditioning (HVAC) Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A "no" response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
Students use lead free solder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

When students test oil fired furnaces ("trainers") the combustion products are exhausted to the outside through a chimney	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... determined that the exhausted air is not re-entrained into the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soldering iron temperatures typically range from 620° - 700° F. The solder is not heated to extreme temperatures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soldering is done in a well-ventilated area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The soldering work areas have a local exhaust ventilation system or tip extraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.....the exhaust pulls soldering and flux emission away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust hoods are located within 8 inches of the soldering task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building or into an air filtration unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the filters in the air filtration unit are changed regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depending on the quantity, flammable materials (eg: solvents) are either stored in a flammable storage cabinet or in a room with an exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the room air is exhausted to the outside and is not re-circulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soldering work areas are kept clean and wiped with a damp towel to minimize the presence of metal dust in the work area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food is not permitted in the soldering work area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Lines are routinely checked for refrigerant leaks to insure that gases such as freon are not released into the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------

4. Protective Equipment

	Yes	No	NA ?
Students and staff wear nitrile gloves if there is a possibility of skin exposure to solvents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation

The ceiling height in the classroom is high enough to allow for adequate dilution of soldering emission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Manufacturing Technology Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A “no” response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
Water-based or aqueous cleaning methods have replaced solvent cleaning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop minimizes the use of biocides for its water-miscible metalworking fluids (MWF)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metalworking fluids are selected to minimize components that may be irritating (such as alkanolamines, volatile petroleum products, chlorine)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where possible, the shop minimizes the use of tungsten carbide cutting tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

Emission from grinding and buffing operations is controlled with local exhaust ventilation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the exhaust pulls machining mist away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is either exhausted out of the building or through appropriate filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High pressure machining emissions are controlled with local exhaust ventilation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... the exhaust pulls machining mist away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building or into appropriate filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The local exhaust systems are maintained with a preventive maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

The shop has a coolant management program that is designed to maintain MWF quality and performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Machines are inspected to prevent leaked oil (“tramp oil”) from contaminating MWF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skimmers are used to remove “tramp oil” from the MWF sumps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filters are used to remove metal chips (“swarf”) from the MWF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The appropriate coolant concentration is maintained when water-miscible MWF is used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The appropriate coolant pH is maintained when water-miscible MWF is used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are instructed not to through trash or food into the machining sumps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The shop has a protocol for draining, cleaning and recharging MWF sumps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

	Yes	No	NA ?
Students and staff wear the appropriate eye protection, coveralls and gloves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation

The ceiling height in the manufacturing technology shop is high enough to allow for adequate dilution of shop emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows in the shop can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make up air(if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Masonry Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A "no" response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

Hazardous materials in concrete and mortar include alkaline compounds such as lime (calcium oxide) that are corrosive; crystalline silica which is abrasive to the skin and can damage the lungs (silicosis) and chromium that can cause skin and respiratory allergic reactions.

1. Product Substitution

	Yes	No	NA ?
Where possible, students use ready-mixed concrete instead of mixing on site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Control

The sanding, grinding and cutting work areas have a local exhaust ventilation system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... this exhaust system pulls dust away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust hoods are located within 8 inches of the task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is re-circulated through bag filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sanding, grinding and cutting tasks are done with wet methods, where possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The local exhaust system is maintained with a preventive maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When laying concrete block, different sizes are on hand so that students can avoid cutting or hammering to make them fit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When kneeling on fresh concrete, students use a dry board or waterproof kneepads to protect knees from water that can soak through fabric.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Students wash their hands and faces at the end of class.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facilities for cleaning boots and changing clothes are available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wet methods and shop vacuums are used to clean the floor or surfaces (as opposed to compressed air or dry sweeping)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The dust collectors are emptied off hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

	Yes	No	NA ?
Fitted N95 dust masks are worn when local exhaust ventilation is not feasible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To protect the skin from cement and cement mixtures, students and teachers wear alkali-resistant gloves; coveralls with long sleeves, full-length trousers and safety glasses with side shields.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation

Bags of cement are emptied and mixed in a well ventilated area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Plumbing Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A "no" response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

1. Product Substitution

	Yes	No	NA ?
Students use lead free solder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Products used to clean primer or cement off of parts are free of methylene chloride	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

When students test hot water boilers the combustion products are exhausted to the outside through a chimney	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... the exhausted air is not re-entrained into the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soldering torch temperatures range from 620° - 700° F. The solder is not heated to extreme temperatures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soldering is done in a well-ventilated area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The soldering work areas have a local exhaust ventilation system or tip extraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... the exhaust pulls soldering and flux emission away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust hoods are located within 8 inches of the soldering task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building or into an air filtration unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... the filters in the air filtration unit are changed regularly per manufacturers' specifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Primers and cement (acetone, cyclohexanone and tetrahydrofuran) are brushed onto PVC pipes in a well-ventilated area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The primed pipes dry in a well-ventilated area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depending on the quantity, flammable materials (eg: PVC primers and cement) are either stored in a flammable storage cabinet or in a room with an exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... the flammable storage room air is exhausted to the outside and is not re-circulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The local exhaust systems are maintained with a preventive maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soldering work areas are kept clean and wiped with a damp towel to minimize the presence of metal dust in the work area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food is not permitted in the soldering work area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After soldering, students wash their hands before eating or smoking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

	Yes	No	NA ?
Students and staff wear nitrile gloves if there is a possibility of skin exposure to either the primer or cement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation

The ceiling height in the classroom is high enough to allow for adequate dilution of soldering emission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

Welding Checklist

Name: _____	School: _____
Room #/ Name of Shop: _____	Date Completed: _____

Use the checklist to assess the status of the following indoor air quality control measures:

A "no" response requires further attention.

The checklist does not address safety hazards.

The Tools for Schools Building team will use a smoke pencil to check items marked .

“Welding operations generally involve melting of a metal in the presence of a flux or a shielding gas by means of a flame or electric arc. The operation may produce toxic gases or fumes from the metal, the flux, metal surface coatings or surface contaminants. Certain toxic gases such as ozone or nitrogen dioxide may also be formed by the flame or arc.” NIOSH: Safety and Health for Industrial/Vocational Education, 1981.

1. Product Substitution

	Yes	No	NA ?
The base metals are free of toxic metals such as beryllium, lead or cadmium.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The base metals are free of galvanized coatings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Local Exhaust Ventilation/ Engineering Controls

The welding work areas have a local exhaust ventilation system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... the exhaust pulls welding fume and gases away from the students 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the exhaust hoods are located within 8 inches of the welding task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the air is exhausted out of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the local exhaust systems are maintained with a preventive maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welding jobs are inspected to determine if they are in a confined space.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... students are instructed not to weld in confined spaces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
if an instructor welds in a confined space, a “Confined space entry permit” is issued by a safety and health specialist who has inspected the job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... ventilation is provided for the confined space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop has a supply of make-up air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Work Practices and Training

Students use very small quantities of chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students have been trained on how to work safely with chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The chemical inventory and Material Safety Data Sheets (MSDSs) are in a binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pieces to be welded are inspected to make sure they are free of dangerous coatings or residues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The shop area is inspected for the presence of flammable or combustible materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The shop area is inspected for the presence of “chlorinated hydrocarbons” such as trichloroethylene or perchloroethylene. (The ultraviolet light emitted by arc welding can break down “chlorinated hydrocarbons” and form phosgene gas)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... welding is done at least 100 feet away from these flammable or combustible materials or chlorinated hydrocarbons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Protective Equipment

	Yes	No	NA ?
Fitted N95 dust masks are worn when local exhaust ventilation is not feasible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students and teachers wear appropriate eye protection, coveralls and gloves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Dilution Ventilation

The ceiling height in the classroom is high enough to allow for adequate dilution of welding emission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located unit ventilator (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes.... outside air is flowing into the unit ventilator 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tempered and filtered air is flowing out of the unit ventilator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located air supply and return vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing from the supply vents and into the return vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Located the exhaust vents (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes..... air is flowing into the vents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The windows can be opened (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Other indoor air quality issues noted by the instructor:

The “Tools for Techs” Checklist Summary

SUMMARIZING THE “TOOLS FOR TECHS” CHECKLISTS

(Remember: a “no response on the checklist indicates that the issue requires further attention.)

**For each shop, note which control strategies require further attention.
Refer to the checklists for specific details.**

Room # Shop	Product Substitution	Local Exhaust Ventilation/ Engineering Controls	Work Practices and Training	Protective Equipment	Dilution Ventilation	Other Comments