COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

To: Members of the State Board of Health

From: Therese Pilonetti, Unit Manager, Division of Environmental Health and Sustainability

Amy Gammel, Child Care and Schools Program Coordinator, Division of Environmental Health and Sustainability

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Through: Jeff Lawrence, Director
Division of Environmental Health and Sustainability (JL)

Date: October 19, 2017

Subject: **Request for Rulemaking Hearing**
Proposed Amendments to 6 CCR 1010-6, *Rules and Regulations Governing Schools in the State of Colorado*, with a request for a January 2018 rulemaking hearing

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The Division of Environmental Health and Sustainability ("division") is proposing revisions to 6 CCR 1010-6, Rules and Regulations Governing Schools in the State of Colorado. The Division is requesting that the Board of Health schedule a rulemaking hearing to consider adoption of the proposed amendments at the January 17, 2018, Board of Health Meeting.

When the rule was last opened in 2015, new language and standards were put in place. Consensus was achieved but all involved agreed to monitor implementation to see if adjustments were needed. The Department continued to explore pathways that would enable schools to have live poultry in the classroom to support the life-cycle curriculum that occurs in many kindergarten programs. After extensive outreach with our federal, state and local partners, the Department developed a path that safely brings live poultry into the classroom. If adopted, this rule revision will be in place to enable live poultry as part of the spring 2018 curriculum in schools throughout Colorado.

In addition, the stakeholder group monitored the implementation of the chemical list. Upon review, stakeholders agreed that stable chemicals can be kept for 5 years (rather than one year in the current rule). The Department agrees that this adjustment can be made while protecting the health and safety of students and school personnel. The proposed revisions establish a shelf life rating, a one-year and a five-year storage requirement.

The remainder of the proposed revisions are clarifying to ensure consistent interpretation of the rule requirements.

The division appreciates the Board's consideration.

STATEMENT OF BASIS AND PURPOSE
AND SPECIFIC STATUTORY AUTHORITY
for Amendments to
6 CCR 1010-6, *Rules and Regulations Governing Schools in the State of Colorado*

Basis and Purpose.

Rationale:

The purpose of the Board of Health's 6 CCR 1010-6, Rules and Regulations Governing Schools in the State of Colorado, is to establish provisions regulating the minimum requirements necessary to safeguard the health and safety of school occupants.

Since the adoption of the 2015 school regulation, we have received 20 variance requests. Nine of those were related to the quantity of restricted chemicals allowed in the school and seven were related to live poultry. The division, in collaboration with stakeholders that included representatives from local public health agencies, other CDPHE divisions, school associations, teachers, district and school representatives, and other government entities, is proposing the following amendments:

- Section 6.7.4(C)

  The current regulation prohibits live poultry in classrooms and communal areas with children kindergarten age and younger. The stakeholder group agreed that this was necessary to protect the health of students. However, all remained interested in finding a way to allow classrooms to safely have live poultry when delivering the life-cycle curriculum that occurs in many kindergarten programs. The Department continued to study this. After extensive outreach with our federal, state and local partners, the Department developed a path that safely brings live poultry into the classroom by establishing practices so kindergarten children can observe the life-cycle process. Stakeholders support this revision; it balances learning and child health. If adopted this rule revision will be in place to enable live poultry as part of the spring 2018 curriculum in schools throughout Colorado. Proposed revisions allow live poultry for kindergarten age children when protective measures are in place;

- Section 6.7.6(E)

  Some individuals interpreted the rule to mean only sanitizers approved for use on food contact surfaces can be used on commonly touched surfaces. This prevents schools from using nonfood contact surface sanitizers on these surfaces. Clarification was added to allow other products to be used on these surfaces in accordance with their labeled instructions. Additionally, amendments were added to clarify that disinfectants can be used on these surfaces during times of increased illnesses in the school;

- Section 6.12.3(D) and Appendices

  The current regulation requires all restricted chemicals to be obtained in quantities that can be expended in one school year. However, some restricted chemicals have an excellent or indefinite shelf life. As the stakeholder group monitored the implementation of the chemical list, stakeholders agreed that stable chemicals can be kept for 5 years (rather than one year in the current rule). The Department agrees that this adjustment can be made while protecting the health and safety of students and school personnel. A

column was added to the Restricted (including Demonstration Use Only) Chemical Lists to identify the shelf life rating for each chemical. Storage times now align with the shelf life rating.

- Insert a Table of Contents to support school personnel's ability to quickly reference the applicable rule text.

Specific Statutory Authority.

These rules are promulgated pursuant to the following statutes: Sections 25-1-108(1)(c)(I), 25-1.5-101(1)(a), (h), (k), and (l), 25-1.5-102(1)(a) and (d), C.R.S.

Is this rulemaking due to a change in state statute?

_____ Yes, the bill number is _____; rules are ___ authorized ___ required.
__X__ No

Is this rulemaking due to a federal statutory or regulatory change?

_____ Yes
__X__ No

Does this rulemaking incorporate materials by reference?

_____Yes
__X__No

Does this rule create or modify fines or fees?

_____ Yes
__X__ No

REGULATORY ANALYSIS
for Amendments to
6 CCR 1010-6, *Rules and Regulations Governing Schools in the State of Colorado*

1. A description of the classes of persons who will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule.

School administrators and representatives, students, teachers, parents of enrolled students, visitors to the schools, CDPHE, and local public health agencies are all potentially affected and will benefit from the proposed changes to the regulations.

2. To the extent practicable, a description of the probable quantitative and qualitative impact of the proposed rule, economic or otherwise, upon affected classes of persons.

Additional costs will not be incurred by the Department or by families with children enrolled in school.

Schools opting to offer live poultry as part of the kindergarten curriculum may incur some costs to implement the safeguards for the housing of live poultry; however, the rule requirements align with common sense and it is anticipated that any costs would be minimal and time-limited. The minimal costs are offset by the health benefits to the students and individuals working in the school, including the avoidance of health care costs associated with illness. The minimal costs are also offset by the schools no longer needing to request a variance to include live poultry in their curriculum.

There is a potential cost savings to schools to extend the storage authorization to five years for certain, stable restricted chemicals.

For schools that interpreted the current rule narrowly, clarifying the array of sanitizers that can be used on surfaces, affords schools more flexibility. There may be a cost savings associated with this.

3. The probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenues.

There is a minimal savings to the Department as it anticipates less variances will be requested. It is anticipated that the minimal savings will be offset with additional requests for technical assistance to support schools housing live poultry. There is no effect on state revenues.

4. A comparison of the probable costs and benefits of the proposed rule to the probable costs and benefits of inaction.

The cost of revision is minimal; the benefit is increased flexibility for schools. Inaction will result in the use of unnecessary resources for submitting, reviewing, and managing statewide variance requests.

5. A determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule.

There are no less costly or less intrusive methods for achieving the purpose of the revised regulation. The purpose of these revisions is to provide additional regulatory clarity and flexibility while maintaining or improving health and safety of school occupants.

6. Alternative Rules or Alternatives to Rulemaking Considered and Why Rejected.

The school regulations went through an extensive review and revision process in 2015. At that time, we agreed to revisit the proposed revised sections to assess the impacts they created. This revision is a result of that review, engagement and consensus with stakeholders.

7. To the extent practicable, a quantification of the data used in the analysis; the analysis must take into account both short-term and long-term consequences.

- The Department reviewed 20 variance requests, the waiver conditions and whether there were any adverse consequences associated with the granting the waiver.
- The Department continued to review federal, state and partner resources for housing live poultry.
- The Department, in partnership with stakeholders, performed an extensive review of safety data sheets to determine shelf stability of all restricted chemicals in Appendix B and B2.

STAKEHOLDER COMMENTS
for Amendments to
6 CCR 1010-6, *Rules and Regulations Governing Schools in the State of Colorado*

State law requires agencies to establish a representative group of participants when considering to adopt or modify new and existing rules. This is commonly referred to as a stakeholder group.

Early Stakeholder Engagement:
The following individuals and/or entities were invited to provide input and included in the development of these proposed rules:

The school stakeholder group included representatives from local public health agencies (LPHAs), the Colorado School District Environmental Professionals, school administrators, teachers, Colorado State University, other Colorado Department of Public Health and Environment (CDPHE) divisions, and the Colorado Department of Education.

School Rulemaking Stakeholders

- Adamson, Deb, Weld County Public Health
- Aguilar, Nicole, Larimer County Health Department
- Alvarez, Kelly, Kit Carson County Public Health
- Antuna, Kevin, Weld County PH
- Austin, Jim, Montrose County Health and Human Se
- Battige, Kristen, Thompson School District
- Braun, Steven, CO Springs School District 11
- Baker, Stacey, TCHD
- Brueckner, Corey, Littleton Public Schools
- Burke, Devon, Pueblo County School District 70
- Bustos, Mel, NCHD Marketers Association
- Cameron, Don, Jefferson County Public Schools
- Carlstrom, Andrea, Chaffee County Public Health
- Carlton, Vicki, Pueblo County
- Carpenter, Jeanette, na
- Cassady, Robert, Jefferson Co. Public Schools
- Chavez, Jenn, Gunnison
- Coin, Heather, Northeast County Health Department
- Collins, Daniel E., Broomfield Health and Human Ser
- Cowman, Scott, Routt County Dept. of Environmenta
- Cross, Sheila, Park County Public Health
- Cummings, Linda, Academy District 20
- Dahl, Kurt, Pitkin County
- Darden, Sid, Fremont County Env. Health Services
- Daugherty, Brian, Pitkin County
- Davis, Rita, Aurora Public Schools
- Deardorff, Kris, Dawson School
- DeGolier, Laura, TCHD
- Detling, Jennifer, Denver Environmental Health
- Devore, Jim, Larimer County Public Health
- Donovan, Amber, NCHD
- Doussett, Aaron, El Paso County
- Dunbar, Caitlin, Denver Environmental Health
- Duncan, Laura, Boulder Valley School District
- Eagle County General EH, Eagle County
- Eisenman, Tom, Park County Public Health
- Fawcett, Laura, Eagle County Env. Health
- Felch, Roger, Douglas County School District
- Fennell, John, Cherry Creek Schools
- Furstenau, Julie, Colorado Springs School District 11
- Gamboa, Britt, Broomfield County Public Health
- Glenn, Monika, SanJuan Basin Health Department
- Glowacki, Jean, CSU
- Gomez, Diane, Denver Environmental Health
- Gonzales, Tom, El Paso County Public Health
- Greenman, Elizabeth, Byers School District
- Grow, Elnore, Colorado Association of Science Teachers
- Hall, Kim, Broomfield
- Hanks, Karola, Durango Fire Rescue

- Hardy, Tara, Silver Thread Public Health
- Harkins, Billy, Garfield County
- Hartzell, Gary, Elbert
- Hatak, Brian, Littleton Public Schools
- Hendershott, Dan, Summit County
- Hogg, Nicol, Denver Environmental Health
- Howard, Kimberly, Aurora Public Schools
- Hughes-Conner, Melinda, Denver Environmental Hea
- Hunsworth, Lynnette, San Juan Basin Public Health
- Johnson, Lisa Ann, n/a
- Johnston, Kolin, Cherry Creek Schools
- Kaiser Kara Boulder County Public Health
- Keith, Carol, Alamosa County Public Health
- Kemp, Marilyn, Cherry Creek Schools
- Knowles, Marian, Denver Jewish Day School K-12
- Korbit, Su, Otero County Health Department
- Kuhnel, Rebecca, Weld
- Kulick, Maya, Summit County Public Health
- Lemmons, Andrew, Park County Public Health
- Lewis, Alan, Natural Grocers
- Lewis, Anica, Lake County Public Health
- Littlepage, Jackie, Lake County Public Health
- Lovato, Melissa, El Paso County Health Department
- Luckey, Marla, El Paso County
- Maguire-Rosemas, Marti, n/a
- Macpherson, Claire, San Juan Basin Public Health
- Martinez, John, Las Animas-Hueffano County Distric
- Mason, Casey, Denver Environmental Health
- Mathews, Melissa, Montezuma
- McClung, Suzanne, Jefferson Co. Public Schools
- McDonald, Bob, Denver Environmental Health
- Mead, Jay, Pueblo City Schools
- Melzer, Rick, Routt County Dept. Env. Health
- Merry, Ray, Eagle County Health Department
- Minteer, Karen, Jeffco Public Schools
- Molloy, Bridget, n/a
- Moors, Daniel, Colorado Springs School District 11
- More, Jyoti, Denver Public Schools
- Mull, Monique, Mesa County Health Dept.
- Nara, Heather , Mesa County Health Dept.
- Nash, Tyler, Colorado Springs School District 11
- Nielson, Colleen, Lake
- Nordstrom, Ken, Delta
- Odette, Seth, Prowers County Public Health
- Oliver, CJ, Aspen Environmental Health Dept.
- Osgood, Audrey, Mesa County
- Patrick, Kathy, Colorado Dept. of Education
- Petersen, Nelle, Silver Thread Public Health District, Lake City
- Pope, Charles, Mesa County Valley School District 51
- Price, Daniel, Jeffco Public Schools
- Puetz, Lacey, Denver Environmental Health
- Ramey, Lynn, Park County
- Ramig, Mindi, Jefferson County Public Health
- Rappold, Lynnea, Alamosa County Public Health
- Revello, Jacqueline, Teller County
- Reynolds, Joni, Gunnison
- Riess, Jeannine, CSU Environmental Health Services
- Ritter, Rick, Otero County Health Department
- Russell, Jon, Addenbrooke Classical Academy
- Salter, Melissa, Mesa County EH
- Savalox, Heather, Routt
- Schambach, Heather, Jeffco Public Schools
- Schelble, Dr. Susan M., Metropolitan State University of Denver
- Scully, Sarah, Boulder
- Simpson, Gina, Montrose
- Smith, Chris, San Miguel
- Smith, Keith, Denver Environmental Health
- Smith, Steve, Animas High School
- Stillwell, Stephen, Broomfiled County Public Health
- Stauffer, Vera, Montrose County Health and Human Services
- Taube, Kerry, Las Animas County Public Health
- Thomas, Mark, Weld County Health Department
- Tomlin, Courtney, TCHD
- Trautner, Nick, Weld County
- Tsevdos, Natalie, Garfield County Public Health
- Udlock, Michael, Hope Online Learning Academy

- Urbonas, Wayne (Wano), Chaffee County Public Hea
- Vogel, Shana, Weld County Health Department
- Wallace, Claudia, Colorado Education Initiative
- Walters, Randy, Poudre School District
- Welsby, Christina, Addenbrooke Classical Academy
- Welshon, Larry, n/a
- White, Cathy, CDPHE
- Wilkinson, Jane, Boulder County Public Health
- Williams, Josh, Garfield County Public Health
- Wilson Mike West Grand School District 1
- Woodward, Jessa, JCPH

CDPHE staff:

- Rael, Brianne, CDPHE/DEHS
- Cronquist, Alicia, CDPHE/DCEED
- House, Jennifer, CDPHE
- Gammel, Amy, CDPHE/DEHS
- Jarvis, Rachel, CDPHE
- O'ConnorMarian, CDPHE
- Lawrence, Jeff, CDPHE/DEHS
- McConnell, Greg, CDPHE/DEHS
- Pilonetti, Therese, CDPHE/DEHS
- Ruble, Cary, CDPHE/DEHS
- Scott, Sean, CDPHE/DEHS
- White, Cathy, CDPHE

Stakeholder Group Notification

The stakeholder group was provided notice of the rulemaking hearing and provided a copy of the proposed rules or the internet location where the rules may be viewed. Notice was provided prior to the date the notice of rulemaking was published in the Colorado Register (typically, the 10th of the month following the Request for Rulemaking).

_X_ Not applicable. This is a Request for Rulemaking Packet. Notification will occur if the Board of Health sets this matter for rulemaking.

____ Yes.

Summarize Major Factual and Policy Issues Encountered and the Stakeholder Feedback Received. If there is a lack of consensus regarding the proposed rule, please also identify the Department's efforts to address stakeholder feedback or why the Department was unable to accommodate the request.

The division has been tracking opportunities to improve this regulation since its last amendment in April 2015. Over the last 3 months, the division began having informal discussions with stakeholders about the proposed changes. Based on these discussions and positive feedback, formal stakeholder notification was sent on September 6, 2017. Only supportive comments on the proposed revisions were received, along with simple grammatical edits.

Please identify health equity and environmental justice (HEEJ) impacts. Does this proposal impact Coloradoans equally or equitably? Does this proposal provide an opportunity to advance HEEJ? Are there other factors that influenced these rules?

The proposed rule revisions will continue to promote healthy and safe schools for Colorado students, faculty and other occupants regardless of race, color, national origin, or income.

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Division of Environmental Health and Sustainability

RULES AND REGULATIONS GOVERNING SCHOOLS IN THE STATE OF COLORADO

6 CCR 1010-6

Adopted by the Board of Health on _____; effective, _____.

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6.7.4 Insect, Rodent Control and Classroom Animals

A. Insects, rodents, bats and other pests shall be managed, when they reach levels considered to pose economic or health threats, with integrated strategies for long-term pest suppression, using the most cost-effective means with the least possible hazard to people, property, and the environment.

B. Animals used for instructional purposes shall be maintained in a sanitary condition and in a manner to prevent health hazards or nuisance conditions. Their enclosures or pens

shall be provided with easily cleanable surfaces and maintained in good repair. Hygienic practices shall be supervised during and following contact with animals. Location and/or presence of animals shall be determined based on the protection of the health of students and staff with allergies and/or asthma.

C. Live poultry (e.g., chicks and ducklings), reptiles, and amphibians shall be prohibited ~~from~~ as pets in classrooms with children kindergarten age or younger ~~or communal areas that these children use~~. Because infections from these animals spread via fecal-oral transmission (hand to mouth behaviors), use of these animals in other classrooms where children engage in frequent hand to mouth behaviors is discouraged.

1. Embryology units involving the incubation of poultry eggs are allowed under the following conditions:

a. Eggs and live birds must be enclosed in an incubator or brooding box at all times.

b. The incubators and brooding boxes shall be placed on a nonabsorbent, smooth, and easily cleanable surface. Flooring beneath shall be non-carpeted and easily cleanable.

c. The areas surrounding the incubators and brooding boxes shall be washed, rinsed, and disinfected at least daily with an approved disinfectant meeting the criteria listed in 6.7.6 (F)(1). The disinfectant used shall have a contact time of five minutes or less.

d. Once chicks hatch they must be contained in the brooding boxes at all times and removed from the building within two weeks.

e. Children in kindergarten may not handle the eggs, live birds, or their enclosures.

f. Staff and children first grade and ~~older~~subsequent grades involved with the care of the eggs or live birds shall thoroughly wash their hands with soap and running water immediately after handling eggs, birds, or enclosures.

g. All staff and children who participate in the embryology unit must thoroughly wash their hands prior to meals and snacks.

h. Hand sanitizer shall not be used in lieu of handwashing.

i. Children shall not eat in areas where incubators or brooding boxes are kept, even during inclement weather.

j. The Department shall be contacted if there are two or more gastrointestinal illnesses identified, within a similar timeframe, in children or staff in classrooms where the incubators or brooding boxes are located.

k. If preschool age children or younger are in the building the animals and their enclosures may not be in a communal area used by these younger children.

2. Live poultry coops are allowed under the following conditions:

a. Live poultry shall be enclosed in an outdoor coop.

b. If preschool age children or younger are at the school, the coop may not be located in a communal area used by these younger children.

c. Kindergarten age children or younger may not handle the poultry, eggs, or have direct contact with the coop.

d. An alcohol based hand sanitizer with at least 60% alcohol shall be provided at entrances and exits of the chicken coop and the area where chickens are allowed to roam.

e. All adults and children shall use hand sanitizer after any contact with the poultry, eggs, or the coop. Adults and children must then immediately wash their hands upon entering the building.

f. Signs instructing the use of hand sanitizer and handwashing shall be clearly posted near the coop. The signs shall clearly state that hand sanitizer must be used immediately following contact with the chickens or the coop and that hands must be washed immediately upon returning to the building.

g. The Department shall be contacted if there are two or more gastrointestinal illnesses identified, within a similar timeframe, in children or staff in classrooms where the incubators or brooding boxes are located.

~~C.~~D. Service animals shall be permitted to accompany their handlers throughout the school provided it is not in food preparation areas. Schools administrators shall make reasonable accommodations wherever possible to protect the health of students with allergies and asthma from contact with classroom and service animals.

~~D.~~E. The use of toxic compounds to control rodents, insects, and other pests shall be implemented only after other means have been used for control, such as the elimination of harborages, cleaning food waste, and sealing of ports of entry. All pesticides shall be used in accordance with U.S Environmental Protection Agency (EPA) registered label directions and stored in a safe manner in an area accessible only to authorized personnel. Application of EPA "restricted use pesticides" shall be performed only by a certified pesticide applicator.

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6.7.6 Toilet, Lavatory and Bathing Facilities

A. Schools shall take active steps to ensure hand washing before eating, after restroom use, and any other time hands may be contaminated.

B. Toilet, lavatory, bathing facilities and drinking fountains shall be provided and installed in accordance 28 CFR, Part 36, *Nondiscrimination On The Basis Of Disability By Public Accommodations And In Commercial Facilities*, revised July 1, 2014 and hereby incorporated by reference.

C. Each hand washing and classroom sink shall be provided with hot and cold water through a mixing valve or combination faucet. Hot water at sinks accessible to children shall be at least 90˚F and shall not exceed a temperature of 120˚F.

D. The use of hand sanitizers in lieu of hand washing is not approved for use within the facility. Hand sanitizers may be used for staff and children only at times and in areas where hand washing facilities are not available, such as while out of doors in remote locations. Hand sanitizers shall be stored in an area where use can be monitored.

E. Sanitizers are to be used on commonly touched surfaces ~~that commonly come into contact with food, hands, the mouth, eyes, nose, and exposed skin of children and staff. General surfaces,~~ such as, but not limited to, chairs, desks, tables, keyboards, and computer mice. These surfaces ~~must~~ shall be cleaned and sanitized at least once a week or whenever visibly soiled.

1. Acceptance of sanitizers shall be determined by the following requirements:

   a. The chemical is registered with the U.S. Environmental Protection Agency and the use of the chemical is in accordance with labeled instructions, including:

      (1) Concentration;

      (2) Contact time;

      (3) Method; and,

      (4) Surfaces.

   b. Sanitizers shall meet the formulation, concentration and application requirements of the Department.

   c. During times of increased illness, or at the discretion of the school health personnel, a disinfectant meeting the approval criteria in section 6.7.6(F)(1) may be used on these surfaces. If surfaces are also used for meals and snacks they shall be washed, rinsed, and sanitized after disinfection.

F. Disinfectants are to be used on surfaces that are commonly contaminated with high hazard body fluids, such as but not limited to restroom surfaces, toilets, diaper changing areas and surfaces that have been in contact with high hazard body fluids.

1. Acceptance of disinfectants shall be determined by the following requirements:

   a. The chemical is registered with the U.S. Environmental Protection Agency and the use of the chemical is in accordance with labeled instructions, including:

(1) Concentration;

(2) Contact time;

(3) Method; and,

(4) Surfaces.

b. Disinfectants shall meet the formulation, concentration and application requirements of the Department.

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6.12.3 Storage Provisions

A. Toxic or hazardous materials shall be stored in safe and appropriate containers, separated by reactive group and stored in a ventilated, locked area or appropriate cabinet. The ventilation requirement of this section may not be required where minimum quantities of such materials are stored for daily use. Toxic or hazardous materials must be stored according to the chemical manufacturer's storage temperature requirements at all times including during school holidays and breaks.

B. All containers of chemicals shall be clearly labeled with the name, original quantity of the material, and the date the material entered the school. Secondary containers and/or prepared solutions intended for storage shall be labeled with chemical name and, if applicable, the formula (including solvent), date of preparation, disposal date, and concentration.

C. Schools shall not purchase or accept donations of prohibited chemicals. These chemicals are prohibited from use and/or storage at the school unless a variance from this regulation is requested in writing by the school and approved by Department. If prohibited chemicals are found in the school, they shall be identified on the container label as “not for use” or “waste” and segregated from the chemical inventory. Unless a variance has been granted by the Department, all schools must dispose of prohibited chemicals. Prohibited chemicals are listed in Appendix A to this regulation.

D. Restricted chemicals shall be removed from the schools if alternatives can be used. If restricted chemicals are present at the school, each chemical shall be identified in the school’s chemical inventory and addressed in the chemical hygiene plan as required ~~by~~ in Sections 6.12.1(E) and (F) of these regulations. Containers of restricted chemicals shall be labeled as such. Restricted chemicals with an indefinite shelf life, as indicated in Appendix B and B2, shall be obtained in amounts that can be expended in five years or less. Restricted chemicals with a good, fair, poor or limited shelf life, as indicated in Appendix B and B2, shall be obtained in amounts that can be expended in one school year, or less than one year if the manufacturer indicates a lesser period of time in which the chemical shall be used. ~~The amount of restricted chemical shall be no more than what can be used in one school year. Restricted chemicals are listed in Appendix B of this regulation.~~

E. Restricted chemicals (demonstration use only) are a subclass in the restricted chemical lists that are limited to instructor demonstration. Students may not participate in the handling or preparation of restricted chemicals as part of a

demonstration. If restricted chemicals (demonstration use only) are present at the school, each chemical shall be addressed in the school's written emergency plan as addressed in sections 6.13(K) and (L) of these regulations. Demonstration only chemicals are listed in Appendix B2 to this regulation.

F. All chemicals, compounds, and hazardous substances shall be inventoried by the school a minimum of once a year. The inventory shall include the name of the compound, the amount, and the year it entered the school. If restricted or prohibited chemicals are present in the school, they shall be designated as such in the chemical inventory. A copy of the inventory shall be kept in the area of use and on file in a location away from the areas where chemicals are stored. The updated inventory shall be provided to the local fire Department and local emergency planning committee upon request.

G. Refrigerators used for flammable compounds shall be prominently marked to indicate they meet the appropriate design requirements for safe storage of flammable liquids. Food for consumption shall not be stored in refrigerators used for flammable or any other laboratory related materials. Food and food containers for experimentation shall be labeled as "not for consumption" and segregated from foods intended for consumption.

H. The storage, preparation, and consumption of food and drink are prohibited in any area where there are toxic or hazardous substances. A personal water bottle is allowed when there are no toxic or hazardous substances in use. When a student's individual health care needs (e.g., health care plan, 504 Plan) require food to be readily available, it shall be allowed in these areas as long as it is protected from contamination and not available for general consumption.

I. Glassware shall be properly constructed and designed for its intended use and shall be handled and stored in a safe manner.

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APPENDICES

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Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
2-Butanone (Methyl Ethyl Ketone or MEK)	$CH_3COC_2H_5$	78-93-3	highly flammable; may form explosive peroxides	Good
Acetamide	CH_3CONH_2	60-35-5	possibly carcinogenic to humans	Poor; deliquescent
Acetanilide (n-Phenylacetamide or Acetamidobenzene)	$CH_3CONHC_6H_5$	103-84-4	combustible; irritant	Indefinite
Acetic Acid	CH_3COOH	64-19-7	flammable; corrosive	Good
Acetic Anhydride	$(CH_3CO)_2O$	108-24-7	water-reactive; corrosive; flammable	Good
Acetone	CH_3COCH_3	67-64-1	highly flammable; inhalation hazard	Good
Acetylcholine Bromide	$C_7H_{16}BrNO_2$	66-23-9	toxic; irritant	Good
Acridine Orange	$C_{17}H_{19}N_3$	10127-02-3	irritant	Fair
Adipoyl Chloride	$ClOC(CH_2)_4COCl$	111-50-2	corrosive	Poor
Alizarin Red	$C_{14}H_7NaO_7S$	130-22-3	toxic	Indefinite
Alkyl Aluminum Chloride	Unavailable	Unavailable	water reactive	Poor; deliquescent
Aluminum (Powder)	Al	7429-90-5	water-reactive; strong reducing agent; pyrophoric	Indefinite
Aluminum Acetate	$Al(C_2H_3O_2)_2OH$	142-03-0	toxic	Good
Aluminum Bromide	$AlBr_3$	7727-15-3	air- and water-reactive; corrosive	Fair

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Aluminum Chloride Hexahydrate	$AlCl_3 \cdot 6H_2O$	7784-13-6	water-reactive; corrosive	Poor; deliquescent
Aluminum Fluoride	AlF_3	7784-18-1	water-reactive; corrosive; inhalation hazard	Fair
Aluminum Hydroxide	$Al(OH)_3$	21645-51-2	possibly toxic	Indefinite
Aluminum Nitrate	$Al(NO_3)_3 \cdot 9H_2O$	7784-27-2	strong oxidizer	Indefinite
Aluminum Tetrahydroborate (Aluminum Borohyrdide)	Al(BH4)3	16962-07-5	poison; air- and water-reactive; pyrophoric; strong reducing agent	Fair
Ammonia, Anhydrous	NH_3	7664-41-7	poison; water-reactive; inhalation hazard; corrosive	Indefinite
Ammonia Solutions in Water	NH_3	7664-41-7	corrosive; reactive; toxic	Indefinite
Ammonium Acetate	$NH_4C_2H_3O_2$	631-61-8	inhalation hazard; irritant	Poor; deliquescent
Ammonium Bicarbonate	NH_4HCO_3	1066-33-7	inhalation hazard; irritant	Good
Ammonium Dichromate	$(NH_4)_2Cr_2O_7$	7789-09-5	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Fair
Ammonium Bromide	NH_4Br	12124-97-9	inhalation hazard; irritant	Fair to poor; hygroscopic
Ammonium Carbonate	NH_4CO_3	10361-29-2	inhalation hazard; irritant	Indefinite
Ammonium Chloride	NH_4Cl	12125-02-9	toxic; inhalation hazard; irritant	Fair to poor; hygroscopic

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Ammonium Chromate	$(NH_4)_2CrO_4$	7788-98-9	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Indefinite
Ammonium Fluoride	NH_4F	12125-01-8	corrosive; toxic	Fair to poor; substance is deliquescent
Ammonium Hydroxide	NH_4OH	1336-21-6	inhalation hazard; severely corrosive	Indefinite
Ammonium Iodide	NH_4I	12027-06-4	inhalation hazard	Poor; very hygroscopic
Ammonium Molybdate Tetrahydrate	$(NH_4)_6Mo_7O_{24}\cdot 4H_2O$	12054-85-2	toxic	Indefinite
Ammonium Nitrate (500 g limit)	NH_4NO_3	6484-52-2	shock sensitive; oxidizer	NA
Ammonium Oxalate Monohydrate	$(NH_4)_2C_2O_4\cdot H_2O$	6009-70-7	corrosive; toxic	Indefinite
Ammonium Phosphate, Dibasic (Diammonium Hydrogen Phosphate	$(NH_4)_2HPO_4$	7783-28-0	respiratory hazard; potential for skin and eye damage	Indefinite
Ammonium Phosphate, Monobasic (Ammonium Dihydrogen Phosphate)	$NH_4H_2PO_4$	7722-76-1	respiratory hazard; potential for skin and eye damage	Indefinite
Ammonium Sulfate	$(NH_4)_2SO_4$	7783-20-2	respiratory hazard	Indefinite
Ammonium Sulfide	$(NH_4)_2S$	12135-76-1	respiratory hazard; corrosive; poison; flammable	Good
Ammonium Tartrate	$(NH_4)_2C_4H_4O_6$	3164-29-2	irritant	Fair
Ammonium Thiocyanate	NH_4SCN	1762-95-4	inhalation hazard; strong reducing agent	Poor; deliquescent

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Amyl Acetate	$CH_3COOC_5H_{11}$	628-63-7	flammable; toxic	Good
Aniline	$C_6H_5NH_2$	62-53-3	acutely toxic	Poor
Aniline Hydrochloride	$C_6H_5NH_2 \cdot HCl$	142-04-1	corrosive; acutely toxic	Poor
Anisoyl Chloride (Methyoxybenzoyl Chloride)	$C_8H_7ClO_2$	100-07-2	air- and water-reactive; corrosive;	Fair
Barium Acetate	$Ba(C_2H_3O_2)_2$	543-80-6	acutely toxic	Indefinite
Barium Carbide	BaC_2	50813-65-5	water-reactive; toxic	Fair
Barium Chloride, Dihydrate	$BaCl_2 \cdot 2H_2O$	10326-27-9	poison; acutely toxic	Indefinite
Barium Nitrate	$Ba(NO_3)_2$	10022-31-8	oxidizer; toxic	Indefinite
Benzaldehyde	C_6H_5CHO	100-52-7	combustible	Fair
Benzene Phosphorus Dichloride	$C_6H_5PCl_2$	644-97-3	air-and water-reactive; fumes in air; corrosive	Fair
Benzoic Acid	C_6H_5COOH	65-85-0	concentrated dust may form explosive mixture	Indefinite
Benzyl Chloride	$C_6H_5CH_2Cl$	100-44-7	probably carcinogenic to humans; poison; corrosive; toxic; lachrymator; releases toxic fumes when heated	Fair
Benzylsodium	C_7H_7Na	1121-53-5	water reactive; ignites spontaneously in air;	Fair
Benzylamine (Benzenemethanamine)	$C_6H_5CH_2NH_2$	100-46-9	corrosive; poison; combustible	Fair

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Beryllium Tetrahydroborate	$Be(BH_4)_2$	17440-85-6	violently air- and water-reactive; beryllium compounds are carcinogenic to humans	Fair
Biphenyl (Diphenyl)	$C_6H_5C_6H_5$	92-52-4	irritant; combustible	Limited; refer to expiration date on label
Bismuth Pentafluoride	BiF_5	7787-62-4	water-reactive; toxic	Fair
Boric Acid	H_3BO_3	10043-35-3	harmful if swallowed	Indefinite
Boron Bromide Diiodide	$BBrI_2$	14355-21-6	violently water-reactive	Fair
Boron Dibromoiodide	BBr_2I	unavailable	violently water-reactive	Fair
Boron Phosphide	BP	20205-91-8	water-reactive	Fair
Boron Trichloride	BCl_3	13517-10-7	water-reactive; toxic	Fair
Bromine Fluoride	BrF	13863-59-7	water-reactive	Fair
Bromine Water	$Br_2 + H_2O$	7726-95-6	corrosive; irritating fumes; toxic	Indefinite
Bromobenzene	C_6H_5Br	108-86-1	highly flammable; toxic	Indefinite
Bromodiethylaluminum	$C_4H_{10}AlBr$	760-19-0	water-reactive	Fair
Bromoform	$CHBr_3$	75-25-2	poison; lachrymator	Good
Butanol (n-Butyl Alcohol)	$CH_3(CH_2)_3OH$	71-36-3	highly flammable; toxic	Fair

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Butyric Acid	$CH_3CH_2CH_2COOH$	107-92-6	corrosive; combustible; stench agent; lachrymator	Indefinite
Calcium (100 g limit)	Ca	7440-70-2	water-reactive; flammable solid	Good
Calcium Bromide	$CaBr_2$	7789-41-5	toxic	Good
Calcium Hypochlorite	$Ca(ClO)_2$	7778-54-3	strong oxidizer; reactive; toxic	Fair to poor
Calcium Nitrate Tetrahydrate	$Ca(NO_3)_2 \cdot 4H_2O$	13477-34-4	strong oxidizer; shock sensitive	Fair to poor; deliquescent
Calcium Phosphide (CP)	Ca_3P_2	1305-99-3	violently air- and water- reactive; strong reducing agent; poison	Fair
Camphor	$C_{10}H_{16}O$	76-22-2	toxic; flammable solid; combustible	Indefinite
Carbon Disulfide (Carbon Bisulfide)	CS_2	75-15-0	highly flammable; poison; severe fire risk	Indefinite
Cerium (IV) Sulfate (Ceric Sulfate)	$Ce(SO_4)_2$	13590-82-4	strong oxidizer; corrosive; irritant	Limited; refer to expiration date on label
Cesium Amide	CsH_2N	22205-57-8	water-reactive	Fair
Cesium Phosphide	Cs_3P	113737-02-3	water-reactive	Fair
Chlorine Fluoride	ClF	7790-89-8	strong oxidizer; water-reactive	Fair
Chlorine Pentafluoride	ClF_5	13637-63-3	water-reactive	Fair
Chloroacetic Acid	$C_2H_3ClO_2$	79-11-8	acutely toxic; corrosive	Indefinite

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Chloroacetyl Chloride	$C_2H_2Cl_2O$	79-04-9	air- and water-reactive; corrosive; poison; inhalation hazard	Good
Chlorobenzene	C_6H_5Cl	108-90-7	highly flammable; inhalation hazard	Limited; refer to expiration date on label
Chlorodiisobutyl Aluminum (Diisobutylaluminum Chloride)	$C_8H_{18}AlCl$	1779-25-5	water-reactive; highly flammable	Fair
2-Chlorophenyl Isocyanate	C_7H_4ClNO	3320-83-0	poison; highly flammable	Fair
Chromic Acid	CrO_3	1333-82-0	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Poor
Chromium (III) Nitrate Nonahydrate (Chromium Trinitrate)	$Cr(NO_3)_3 \cdot 9H_2O$	7789-02-8	oxidizer; toxic	Good
Chromium (III) Sulfate (Chromic Sulfate)	$Cr_2(SO_4)_3 \cdot nH_2O$	10101-53-8	corrosive; toxic	Indefinite
Chromium Trioxide	CrO_3	1333-82-0	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Poor
Cobalt (II) Nitrate Hexahydrate (Cobaltous Nitrate)	$Co(NO_3)_2 \cdot 6H_2O$	10026-22-9	cobalt and cobalt compounds are possibly carcinogenic to humans; acutely toxic	Poor; deliquescent

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Copper (II) Bromide (Cupric Bromide, Anhydrous)	$CuBr_2$	7789-45-9	toxic; irritant	Poor; deliquescent
Cyclohexane	$CH_2(CH_2)_4CH_2$	110-82-7	highly flammable; poison	Indefinite
Dichloromethane (Methylene Dichloride)	CH_2Cl_2	75-09-2	probably carcinogenic to humans; poison	Good
Diethyl Aluminum Chloride	$C_4H_{10}AlCl$	96-10-6	water-reactive; highly flammable; inhalation hazard	Fair
Diethyl Zinc (DEZ)	$C_4H_{10}Zn$	557-20-0	air- and water-reactive; highly flammable	Fair
Diisopropyl Beryllium	$C_6H_{14}Be$	15721-33-2	water-reactive; beryllium compounds are carcinogenic to humans	Fair
Dimethyl Magnesium	C_2H_6Mg	2999-74-8	air- and water-reactive; spontaneously flammable in air	Fair
Diphenylmethane-4,4-Diisocyanate	$C_{15}H_{10}N_2O_2$	101-68-8	Poison	Poor
Diphenylamine	$(C_6H_5)_2NH$	122-39-4	Poison	Indefinite
Ethanol (Ethyl Alcohol)	C_2H_5OH	64-17-5	highly flammable	Indefinite
Ethyl Acetate	$CH_3COOC_2H_5$	141-78-6	highly flammable; toxic; may form explosive peroxides	Good
Ethyl Methacrylate	$CH_2CCH_3COOC_2$	97-63-2	highly flammable; polymerizable	Poor

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Ethylene Dichloride (1,2-Dichloroethane)	$C_2H_4Cl_2$	107-06-2	highly flammable; possibly carcinogenic to humans; poison; emits toxic gases if heated or burned	Poor
Ethylenediamine	$NH_2CH_2CH_2NH_2$	107-15-3	highly flammable;air-reactive; corrosive	Poor
FAA Solution (Formalin-Aceto-Alcohol Solution)			flammable; acutely toxic; carcinogenic to humans	Good
Fehlings Solution A (Copper (II) Sulfate and Water)			acutely toxic	Fair
Fehlings Solution B (Sodium Hydroxide; Potassium Sodium Tartrate; and Water)			caustic; toxic	Fair
Ferric Chloride, Anhydrous (Iron (III) Chloride)	$FeCl_3$	7705-08-0	corrosive; inhalation hazard	Poor
Ferric Nitrate Nonahydrate (Iron (III) Nitrate Nonahydrate)	$Fe(NO_3)_3 \cdot 9H_2O$	7782-61-8	strong oxidizer; irritant; explosion hazard with heat	Good
Fluorine Monoxide (Oxygen Difluoride)	F_2O	7783-41-7	strong oxidizer; air- and water-reactive; poison; corrosive	Fair
Fluorosulfonic Acid	HSO_3F	7789-21-1	corrosive; air- and water-reactive	Fair
Formalin	CH_2O	50-00-0	toxic; corrosive; carcinogenic to humans	Indefinite

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Formic Acid	HCOOH	64-18-6	flammable; corrosive	Poor
Gasoline	UNDEFINED	8006-61-9 or 86290-81-5	highly flammable; possibly carcinogenic to humans	Poor
Glutaraldehyde	$OCH(CH_2)_3CHO$	111-30-8	water-reactive; toxic	Indefinite
Gold Acetylide	C_2Au_2	70950-00-4	explosive; shock sensitive; water reactive	Fair
Hematoxylin	$C_{16}H_{14}O_6$	517-28-2	toxic	Fair
n-Heptane	$CH_3(CH_2)_5CH_3$	142-82-5	highly flammable; toxic	Good
Hexamethylene Diisocyanate (HDI)	$C_8H_{12}N_2O_2$	822-06-0	water-reactive; toxic	Fair
Hexamethylenediamine (1, 6-Diaminohexane)	$H_2N(CH_2)_6NH_2$	124-09-4	corrosive; toxic	Indefinite
n-Hexane	$CH_3(CH_2)_4CH_3$	110-54-3	highly flammable; toxic	Good
Hydriodic Acid	HI	10034-85-2	acutely toxic; corrosive	Fair
Hydrobromic Acid	HBr	10035-10-6	acutely toxic; water-reactive; corrosive	Fair
Hydrochloric Acid (Muriatic Acid)	HCl	7647-01-0	toxic; severely corrosive	Good
Hydrogen Peroxide (30% or less)	H_2O_2	7722-84-1	readily decomposes with almost anything; strong oxidizer; explosion hazard; corrosive	NA
Hydroquinone (Benzene-1, 4-diol)	$C_6H_4(OH)_2$	123-31-9	toxic	Poor
Hydroxylamine Hydrochloride	$NH_2OH{\cdot}HCl$	5470-11-1	toxic; strong reducing agent	Poor

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Iodine	I_2	7553-56-2	poison; strong oxidizing agent	Fair
Iodine Monochloride (Chlorine Iodide)	ICl	7790-99-0	toxic; water-and air-reactive; strong oxidizing agent; corrosive	Poor
Iron (powder)	Fe	7439-89-6	metal dust may present a fire hazard and a health hazard	Good
Isoamyl Alcohol (3-Methyl-1-butanol or Isopentyl Alcohol)	$(CH_3)_2CHCH_2CHOH$	123-51-3	highly flammable; toxic	Fair
Isobutyl Alcohol	$(CH_3)_2CHCH_2OH$	78-83-1	highly flammable; toxic	Indefinite
Isopropyl Alcohol	$(CH_3)_2CHOH$	67-63-0	highly flammable; toxic; may form explosive peroxides	Fair
Kerosene	UNDEFINED	8008-20-6	highly flammable; toxic	Indefinite
Lead Nitrate	$Pb(NO_3)_2$	10099-74-8	oxidizer; toxic; probably carcinogenic to humans	Indefinite
Lead Tetraoxide, (Red Lead Oxide)	Pb_3O_4	1314-41-6	oxidizer; acutely toxic; probably carcinogenic to humans	Indefinite
Lithium Amide	$LiNH_2$	7782-89-0	water-reactive; toxic; flammable; dangerous fire and explosion hazard	Fair
Lithium Bromide	LiBr	7550-35-8	acutely toxic	Good
Lithium Ferrosilicon	Fe-Si·Li	70399-13-2	water-reactive; acutely toxic; highly flammable	Fair

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Lithium Silicon	Li·Si	68848-64-6	water-and air-reactive; acutely toxic; strong reducing agent	Fair
Lithium Sulfate	$Li_2SO_4 \cdot H_2O$	10102-25-7	toxic	Indefinite
Magnesium (ribbon)	Mg	7439-95-4	flammable solid; water-reactive	Indefinite
Magnesium Nitrate Hexahydrate	$Mg(NO_3)_2 \cdot 6H_2O$	13446-18-9	oxidizer; toxic	Good
Manganese Carbonate	$MnCO_3$	598-62-9	toxic	Good
Manganese Dioxide (Manganese Black; Manganese Oxide; Manganese Peroxide; Manganese Superoxide)	MnO_2	1313-13-9	toxic	Indefinite
Manganese (II) Nitrate Hexahydrate (Manganous Nitrate Hexahydrate)	$Mn(NO_3)_2 \cdot 6H_2O$	10377-66-9	strong oxidizer; toxic	Indefinite
Methyl Alcohol (Methanol)	CH_3OH	67-56-1	highly flammable; toxic	Good
Methyl Aluminum Sesquibromide	$C_3H_9Al_2Br_3$	12263-85-3	water-and air-reactive; toxic; dangerous fire and explosion hazard	Fair
Methyl Aluminum Sesquichloride	$C_3H_9Al_2Cl_3$	12542-85-7	water-and air-reactive; toxic; dangerous fire and explosion hazard	Fair
Methyl Chloride (Chloromethane)	CH_3Cl	74-87-3	highly flammable; toxic	Indefinite
Naphthalene (Moth Balls, Moth Flakes)	$C_{10}H_8$	91-20-3	possibly carcinogenic to humans; highly flammable	Poor

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
1-Naphthol (alpha-Naphthol)	$C_{10}H_7OH$	90-15-3	toxic	Indefinite
n-Butyllithium	C_4H_9Li	109-72-8	spontaneously flammable in air; toxic	Limited; refer to expiration date on label
Nickel (II) Nitrate Hexahydrate	$Ni(NO_3)_2 \cdot 6H_2O$	13478-00-7	nickel compounds are carcinogenic to humans; oxidizer	Poor
Nickel (II) Sulfate Hexahydrate	$NiSO_4 \cdot 6H_2O$	10101-97-0	nickel compounds are carcinogenic to humans	Good
Nitric Acid	HNO_3	7697-37-2	acutely toxic; strong oxidizer; water-and air-reactive	Fair
Nitrobenzene	$C_6H_5NO_2$	98-95-3	possibly carcinogenic to humans; acutely toxic; flammable	Fair
Nitrogen	N_2	7727-37-9	may displace oxygen, which could cause asphyxiation; compressed gas cylinder hazards; liquid nitrogen presents a low temperature hazards	Indefinite
Octyl Alcohol (Octanol or Caprylic Alcohol)	$CH_3(CH_2)_6CH_2OH$	111-87-5	flammable; toxic	Limited; refer to expiration date on label
ortho-Dichlorobenzene (1, 2-Dichlorobenzene)	$C_6H_4Cl_2$	95-50-1	flammable; toxic	Fair to poor

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Oxalic Acid, Dihydrate (Ethanedioic Acid)	$H_2C_2O_4 \cdot 2H_2O$	6153-56-6	acutely toxic	Indefinite
Oxygen	O_2	7782-44-7	strong oxidizer; fire and explosion hazard; compressed gas cylinder hazards	Indefinite
para-Dichlorobenzene (1, 4-Dichlorobenzene	$C_6H_4Cl_2$	106-46-7	possibly carcinogenic to humans; flammable	Fair to poor
Pentyl Alcohol (Amyl Alcohol or Pentanol)	$CH_3(CH_2)_4OH$	71-41-0	highly flammable; toxic	Poor
Petroleum Ether (500 mL limit)	UNDEFINED	Unavailable	highly flammable; toxic	Indefinite
Phosphoric Acid	H_3PO_4	7664-38-2	toxic; corrosive	Good
Phthalic Acid (1, 2-Benzenedicarboxylic Acid)	$C_6H_4(COOH)_2$	88-99-3	combustible; toxic	Limited; refer to expiration date on label
Polymethylene Polyphenyl Isocyanate (Polymeric Diphenylmethane Diisocyanate or MDI)	$(C_8H_5NO)n$	9016-87-9	water reactive; toxic	Fair
Polyvinyl Alcohol	$CH_2CH(OH)$	9002-89-5	combustible; toxic	Indefinite
Potassium Bromate	$KBrO_3$	7758-01-2	possibly carcinogenic to humans	Indefinite
Potassium Chromate	K_2CrO_4	7789-00-6	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Indefinite

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Potassium Dichromate (Potassium Bichromate)	$K_2Cr_2O_7$	7778-50-9	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Indefinite
Potassium Ferricyanide (Red Prussiate)	$K_3Fe(CN)_6$	13746-66-2	contact with acids liberates toxic gas	Fair
Potassium Ferrocyanide (Tetrapotassium Hexacyanoferrate or Yellow Prussiate)	$K_4Fe(CN)_6 \cdot 3H_2O$	14459-95-1	toxic; contact with acids liberates toxic gas	Fair to poor
Potassium Hydroxide (Potash Lye)	KOH	1310-58-3	corrosive; toxic	Fair
Potassium Iodate	KIO_3	7758-05-6	oxidizer; toxic	Indefinite
Potassium Nitrate	KNO_3	7757-79-1	strong oxidizer	Good
Potassium Permanganate	$KMnO_4$	7722-64-7	strong oxidizer; explodes on sudden heating	Indefinite
Potassium Persulfate	$K_2S_2O_8$	7727-21-1	strong oxidizer; toxic	Fair to poor; deliquescent
Potassium Sulfide	K_2S	1312-73-8	pyrophoric; spontaneously combustible; strong reducing agent; acutely toxic	Fair
Propane	$CH_3CH_2CH_3$	74-98-6	highly flammable; compressed gas cylinder hazards; vaporizing liquid may cause frostbite; toxic; will displace oxygen, which may cause asphyxiation	Fair
Propionic Acid	$C_3H_6O_2$	79-09-4	corrosive; flammable; toxic	Indefinite

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Propyl Alcohol (n-Propanol or Propanol)	C_3H_8O	71-23-8	highly flammable; toxic	Indefinite
Pyridine (Azine or Azabenzene)	C_5H_5N	110-86-1	highly flammable; toxic	Good
Pyrosulfuryl Chloride (Sulfur Pentoxydichloride)	$Cl_2O_5S_2$	7791-27-7	water- and air-reactive; corrosive; toxic	Fair
Silver Nitrate	$AgNO_3$	7761-88-8	strong oxidizer; corrosive; toxic	Indefinite
Silver Sulfate	Ag_2SO_4	10294-26-5	toxic	Indefinite
Sodium Bisulfite	$NaHSO_3$	7631-90-5	strong reducing agent; corrosive; toxic	Fair to poor
Sodium Chromate	Na_2CrO_4	7775-11-3	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Fair
Sodium Cobaltinitrite (Sodium Hexanitrocobaltate)	$Na_3Co(NO_2)_6$	13600-98-1	cobalt and cobalt compounds are possibly carcinogenic to humans; toxic	Indefinite
Sodium Dichromate Dihydrate	$Na_2Cr_2O_7 \cdot 2H_2O$	7789-12-0	chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison	Poor
Sodium Fluoride	NaF	7681-49-4	corrosive; poison	Indefinite
Sodium Hydroxide (Lye)	NaOH	1310-73-2	water-reactive; corrosive; toxic	Good
Sodium Hypochlorite	NaClO	7681-52-9	strong oxidizer; corrosive; toxic	Poor
Sodium Iodate	$NaIO_3$	7681-55-2	strong oxidizer; toxic	Fair to poor
Sodium Iodide	NaI	7681-82-5	toxic	Fair to poor

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Sodium Metabisulfite	$Na_2S_2O_5$	7681-57-4	strong reducing agent; corrosive; toxic	Poor
Sodium Nitrate	$NaNO_3$	7631-99-4	strong oxidizer; toxic	Indefinite
Sodium Nitrite	$NaNO_2$	7632-00-0	strong oxidizer; poison	Indefinite
Sodium PhosphateTribasic Dodecahydrate	$Na_3PO_4 \cdot 12H_2O$	10101-89-0	corrosive; toxic	Fair
Sodium Potassium Alloy	K_2Na	11135-81-2	water-reactive; in contact with water releases flammable gases which may ignite spontaneously; corrosive	Fair
Sodium Sulfide Nonahydrate	$Na_2S \cdot 9H_2O$	1313-84-4	explosive; flammable solid; strong reducing agent; corrosive; toxic	Fair
Sodium Thiocyanate	NaSCN	540-72-7	strong reducing agent; toxic	Poor
Sodium Thiosulfate Pentahydrate	$Na_2S_2O_3 \cdot 5H_2O$	10102-17-7	toxic	Poor
Stannic Chloride	$SnCl_4$	7646-78-8	air- and water-reactive; corrosive; toxic	Poor
Strontium Nitrate	$Sr(NO_3)_2$	10042-76-9	strong oxidizer	Indefinite
Sulfur Chloride (Sulfur Dichloride)	Cl_2S_2	10025-67-9	water-reactive; corrosive; toxic	Fair
Sulfur Pentafluoride	S_2F_{10}	5714-22-7	water-reactive; poison	Fair
Sulfuric Acid (<10%)	H_2SO_4	7664-93-9	strong oxidizer; severely corrosive; water-reactive; toxic	Good

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Sulfuric Acid (>10%) (2.5 L limit)	H_2SO_4	7664-93-9	strong oxidizer; severely corrosive; water-reactive; toxic	Good
tert-Butyl Alcohol (t-Butanol or 1,1-Dimethyl Ethanol)	$(CH_3)_3COH$	75-65-0	highly flammable; irritating vapor and liquid	Fair
Terpineol (Terpene Alcohol)	$C_{10}H_{17}OH$	98-55-5	flammable; toxic	Indefinite
Thiophosphoryl Chloride	Cl_3SP	3982-91-0	air- and water-reactive; corrosive; toxic	Fair
Tin	Sn	7440-31-5	metal dust may present a fire hazard and a health hazard	Indefinite
Toluene (Methyl Benzene)	C_7H_8	108-88-3	highly flammable; toxic	Good
Toluene Diisocyanate (TDI)	$C_9H_6N_2O_2$	584-84-9	water-reactive; acutely toxic	Poor
Trichloroethane-1,1,1 (Methyl Chloroform)	$C_2H_3Cl_3$	71-55-6	poison; flammable	Fair
Trichloroethylene (Acetylene Trichloride)	C_2HCl_3	79-01-6	carcinogenic to humans; poison; flammable	Indefinite
Triethanolamine	$C_6H_{15}NO_3$	102-71-6	toxic	Fair
2,2,4-Trimethylpentane	C_8H_{18}	540-84-1	highly flammable; toxic	Limited; refer to expiration date on label
Tri-n-Butylaluminum	$C_{12}H_{27}Al$	1116-70-7	air- and water-reactive; strong reducing agent; pyrophoric; toxic	Fair
Trioctyl Aluminum	$(CH_3(CH_2)_7)_3Al$	1070-00-4	water-reactive; acutely toxic; flammable	Poor

Appendix B – Restricted Chemicals				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Triphenyltetrazolium Chloride (Red Tetrazolium or Vitastain)	$C_{19}H_{15}N_4Cl$	298-96-4	toxic	Good
Trisodium Phosphate (Sodium Phosphate)	Na_3PO_4	7601-54-9	toxic	Indefinite
Tungsten	W	7440-33-7	Metal dust may present a fire hazard and a health hazard.	Indefinite
Turpentine	$C_{10}H_{16}$	8006-64-2	Highly flammable; toxic	Indefinite
Vanadium Trichloride	VCl_3	7718-98-1	Toxic; air- and water-reactive; corrosive	Fair
Xylene	C_8H_{10}	1330-20-7	Highly flammable; toxic by inhalation or absorption through skin.	Good
Zinc (Powder)	Zn	7440-66-6	Strong reducing agent; water-reactive; pyrophoric; metal dust may present a fire hazard and a health hazard	Indefinite
Zinc Acetylide			shock sensitive; water-reactive	Fair
Zinc Nitrate Hexahydrate (500 g limit)	$Zn(NO_3)_2 \cdot 6H_2O$	10196-18-6	Strong oxidizer	Indefinite
Zinc Phosphide	Zn_3P_2	1314-84-7	Strong reducing agent; water reactive; toxic	Fair

Appendix B2 - Restricted Chemicals (Demonstration Use Only)				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Aluminum Chloride, Anhydrous (25 g limit)	$AlCl_3$	7446-70-0	air-and water-reactive; fumes in moist air form toxic gas	Good
Ammonium Dichromate (100 g limit)	$(NH_4)_2Cr_2O_7$	7789-09-5	oxidizer; chromium (VI) compounds arecarcinogenic to humans	Fair
Ammonium Persulfate (100 g limit)	$(NH_4)_2S_2O_8$	7727-54-0	strong oxidizer; explosion hazard	Indefinite
Antimony Metal (50 g limit)	Sb	7440-36-0	poison; combustible powder; strong reducing agent	Indefinite
Bromine (3 - 1 g ampules limit)	Br_2	7726-95-6	strong oxidizer; reacts violently with organics; acutely toxic by inhalation and ingestion	Indefinite
Calcium Carbide (100 g limit)	CaC_2	75-20-7	water-reactive; reacts violently with water to generate acetylene gas; serious fire risk	Good
Chromium Oxide (Chromic Oxide) (20 g limit)	Cr_2O_3	1308-38-9	strong oxidizer; poison; corrosive	Indefinite
Collodion (a solution of pyroxylin in ether and alcohol) (100 mL limit)	$C_{25}H_{33}O_{13}(NO_3)_7$	9004-70-0	highly flammable	Fair
Cyclohexanone (100 mL limit)	$C_6H_{10}O$	108-94-1	highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides	Indefinite
Cyclohexene (100 mL limit)	C_6H_{10}	110-83-8	highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides	Poor

Appendix B2 - Restricted Chemicals (Demonstration Use Only)				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Cyclopentanone (100 mL limit)	C_5H_8O	120-92-3	highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides	Good
Diglyme (Diethylene Glycol Dimethyl Ether) (500 mL limit)	$(CH_3O)CH_2$	111-96-6	combustible; oxidizes readily in air to form explosive peroxides	Limited; refer to expiration date on label
Dinitrophenylhydrazine (100 g limit)	$C_6H_6N_4O_4$	119-26-6	flammable solid; explosive when dry	Good
Hydrides, Borohydrides (e.g., aluminum borohydride, aluminum hydride, magnesium lauminum hydride, phosphorous hydride, sodium borohydride)(100 g limit)	Unavailable		strong reducing agents; air-and water-reactive	sodium borohydride : indefinite, phosporous hydride, magnesium lauminum hydride, aluminum hydride, aluminum borohydride : limited; refer to expiration date on label
Hydrogen (limited to lecture bottle of 4 cu. ft. or less)	H_2	13333-74-0	flammable gas; burns with a pale blue, almost invisible flame; may displace oxygen, which could cause asphyxiation; compressed gas cylinder hazards	Indefinite
Lithium (20 g limit)	Li	7439-93-2	water-reactive; highly flammable solid; readily ignited by and reacts with man y extinguishing agents	Indefinite

Appendix B2 - Restricted Chemicals (Demonstration Use Only)				
Name	**Formula**	**CAS #**	**Hazard***	**Shelf Life[1]**
Magnesium (turnings) (100 g limit)	Mg	7439-95-4	water-reactive; flammable solid; strong reducing agent	Indefinite
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone or MIBK) (250 mL limit)	$CH_3COCH_2CH(CH)$	108-10-1	highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides; possibly carcinogenic to humans	Fair to poor
Pentane (100 mL limit)	C_5H_{12}	109-66-0	highly flammable	Indefinite
Phosphorus, Red (Amorphous) (50 g limit)	P	7723-14-0	water-reactive; flammable solid; can change to white phosphorus if heated; strong reducing agent; acutely toxic	Indefinite
Potassium (1-container with 5 demonstration-size pieces)	K	7440-09-7	violently water-reactive; may form explosive peroxides; combustible; flammable solid; ignites when exposed to water or moisture; may ignite spontaneously in air;	Poor
Potassium Chlorate (100 g limit)	$KClO_3$	3811-04-9	explosive; strong oxidizer	Indefinite
Silver Oxide (100 g limit)	Ag_2O	20667-12-3	strong oxidizer; contact with other material may cause fire	Indefinite
Sodium (100 g limit)	Na	7440-23-5	violently water-reactive; strong reducing agent; flammable solid; may ignite spontaneously in air	Good
Wright's Stain (Hg Containing) (100 mL limit)	UNDEFINED	68988-92-1	contains mercury; poison; acutely toxic	Indefinite

* The hazard information provided for the listed chemicals is not intended to address all safety concerns. Before attempting to work with any chemical, review and comply with information provided on the SDS.

[1] Chemicals with an indefinite shelf life may be stored in the school for up to five years. Chemicals with a shelf life less than indefinite (limited, poor, fair, and good) may be stored in the school for up to one year unless the manufacturer indicates a lesser period of time in which the chemical shall be used.