CHEM 1412 Hazard Assessment

Experiment 19	**Rates of Chemical Reactions II. A Clock Reaction**
Extra precautions to announce	Potassium bromate is toxic. Use caution when handling this chemical.
Additional PPE requirements	none
End-of-lab protocols	(1) Collect all solutions and excess/unused chemicals in a large beaker. (2) Add 0.5 g of sodium sulfite (Na_2SO_3) and 1 g sodium bicarbonate ($NaHCO_3$) to the collection beaker, mix well. (3) Check the pH. If it is above 5, proceed to the next step. If the pH is below 5, add more sodium bicarbonate in roughly 1 g increments until the pH is above 5. (4) Pour the resulting mixture down the drain with plenty of water.
Waste disposal procedures	See end-of-lab protocols.

Experiment 20	**Properties of Systems in Chemical Equilibrium - Le Chatelier's Principle**
Extra precautions to announce	Lead nitrate and cobalt chloride are toxic. Use caution when handling these chemicals.
Additional PPE requirements	none
End-of-lab protocols	none
Waste disposal procedures	Dispose of all solutions in the HAZARDOUS HEAVY METAL INORGANIC waste container.

Experiment 21	**Determination of the Equilibrium Constant for a Chemical Reaction**
Extra precautions to announce	none
Additional PPE requirements	none
End-of-lab protocols	(1) Collect all solutions and excess/unused chemicals in a large beaker. (2) Add approximately 2.5 g sodium bicarbonate ($NaHCO_3$) to the contents of the beaker and mix thoroughly. (3) Check the pH. If it is above 5, proceed to the next step. If the pH is below 5, add more sodium bicarbonate in roughly 1 g increments until the pH is above 5. (4) Pour the resulting mixture down the drain with plenty of water.
Waste disposal procedures	See end-of-lab protocols.

Experiment 23	**pH Measurements – Buffers and Their Properties**
Extra precautions to announce	none
Additional PPE requirements	none
End-of-lab protocols	For Parts B - D of the lab: (1) Collect all solutions and excess/unused chemicals in a large beaker. (2) Test the pH of the solution. If it is below 5 or above 10, then proceed to step 3. If it is between pH 5 and 10, pour down the drain with plenty of water. (3) Add approximately 1 g sodium bicarbonate ($NaHCO_3$) to the contents of the large beaker and mix thoroughly. Repeat step 2.
Waste disposal procedures	Dispose of all chemicals from Parts A in the HAZARDOUS ACIDIC INORGANIC waste container.

Experiment 24	**Determination of the Solubility Product of PbI_2**
Extra precautions to announce	Lead nitrate and potassium nitrite are toxic. Use caution when handling these chemicals. Special rinse bottles containing sodium nitrite/HCl will be provided for the students to rinse their test tubes prior to disposal. Ensure the rinses go into the appropriate waste container.
Additional PPE requirements	Gloves, preferably nitrile gloves, are required during performance of this experiment.
End-of-lab protocols	none
Waste disposal procedures	Dispose of all solutions in the HAZARDOUS HEAVY METAL INORGANIC waste container. Rinse test tubes into the same waste containers with the sodium nitrite solution provided.

Experiment 28	**Determination of Iron by Reaction with Permanganate - A Redox Titration**
Extra precautions to announce	Potassium permanganate is hazardous to the environment. DO NOT pour any solutions or rinses of permanganate down the drain.
Additional PPE requirements	Nitrile gloves are strongly recommended.
End-of-lab protocols	none
Waste disposal procedures	Dispose of all chemicals in the HAZARDOUS ACIDIC INORGANIC waste container.

Experiment 41	**Preparation of Aspirin**
Extra precautions to announce	Many of the chemicals used in this lab are flammable, there will be no open flames during the lab activity.
Additional PPE requirements	none
End-of-lab protocols	none
Waste disposal procedures	(1) Dispose of aspirin/filter paper in the HAZARDOUS SOLID container. (2) Dispose of liquid filtrate down the drain with plenty of water. (3) Dispose of all solutions from the solubility tests in the HAZARDOUS CORROSIVE HALOGENATED waste container.

Experiment 47	**Determination of the Hardness of Water**
Extra precautions to announce	The ammonia buffer smells quite strong. Don't allow the students to dispose of chemicals by pouring them into the trough. They should pour them into a sink with lots of water.
Additional PPE requirements	none
End-of-lab protocols	none
Waste disposal procedures	All chemicals can be disposed of down the sink with plenty of water.

Experiment 51	**Acid-Base Titration Using the pH Meter**
Extra precautions to announce	none
Additional PPE requirements	none
End-of-lab protocols	(1) Collect all solutions and excess/unused chemicals in a large beaker. (2) Test the pH of the solution. If it is below 5 or above 10, then proceed to step 3. If it is between pH 5 and 10, pour down the drain with plenty of water. (3) Add approximately 1 g sodium bicarbonate ($NaHCO_3$) to the contents of the large beaker and mix thoroughly. Repeat step 2.
Waste disposal procedures	See end-of-lab protocols.

Experiment 52	**Enthalpy**
Extra precautions to announce	Magnesium is flammable; there will be no open flames during the lab activity.
Additional PPE requirements	none
End-of-lab protocols	(1) Collect all solutions and excess/unused chemicals in a large beaker. (2) Add approximately 2 g sodium bicarbonate ($NaHCO_3$) to the contents of the beaker and mix thoroughly. (3) Check the pH. If it is above 5, proceed to the next step. If the pH is below 5, add more sodium bicarbonate in roughly 1 g increments until the pH is above 5. (4) Pour the resulting mixture down the drain with plenty of water.
Waste disposal procedures	See end-of-lab protocols.

Experiment 53	**Synthesis of Some Coordination Compounds**
Extra precautions to announce	15 M NH_3 and 12 M HCl are caustic/corrosive and will immediately burn your skin upon contact. The vapors from these chemicals are hazardous to your eyes and lungs. Use extreme caution when handling these chemicals.
Additional PPE requirements	gloves, preferably nitrile gloves, are required
End-of-lab protocols	none
Waste disposal procedures	Dispose of all chemicals and rinse all solids into the HAZARDOUS ACIDIC INORGANIC waste container.

Experiment 54	**Voltaic Cells**
Extra precautions to announce	none
Additional PPE requirements	none
End-of-lab protocols	none
Waste disposal procedures	Dispose of all chemicals in the HAZARDOUS HEAVY METAL INORGANIC waste container.