

Chemistry

College Preparation

(SCH4C)

A Urinalysis Report

The Task

Students were presented with the following scenario and instructions:

You have just accepted a position as a medical lab technician. Your laboratory specializes in testing various biological samples. Your assignment is to analyse samples of urine from different patients, each suffering symptoms related to kidney stones. You are required to submit a formal laboratory report to Dr. Rupert. This report must include a procedure for identifying the metal ion content of each urine sample, the concentration of the ion responsible for kidney stones, and an analysis of each patient's condition.

Final Product

Each student was to submit a urinalysis report that consisted of the following:

- a short introduction, addressed to Dr. Rupert, summarizing the student's findings (approximately 100 words)
- the procedures followed in the testing
- tables of observations, measurements, and results
- balanced equations for all reactions that result in precipitates
- calculations that show the concentration of the ion responsible for the formation of kidney stones
- an analysis of the test results for each patient

Note: Students were not required to submit a bibliography since all work was to be original.

Expectations Addressed in the Exemplar Task

This task gave students the opportunity to demonstrate achievement of all or part of each of the expectations listed below. Expectations 1 and 2 are from the Matter and Qualitative Analysis strand of the course. Expectations 3 and 5 are from the Chemical Calculations strand. Expectation 4 is from the list of expectations that precedes the strands of the course in the curriculum document and that applies to all strands of the course.

Students will:

1. use a flow chart and experimental procedures, including flame tests and precipitation reactions, to determine the presence of ions in an unknown sample;
2. predict the precipitate formed in a chemical reaction by writing double displacement and net ionic equations and using a table of solubility rules;
3. solve problems involving stoichiometric relationships in balanced chemical equations;
4. select, integrate, and interpret information derived from experiments and from print and electronic sources, including Internet sites, and, either in writing or using a computer, compile and display the information in various forms, including diagrams, tables, graphs, and laboratory reports;
5. give examples of everyday situations in which an understanding of quantitative relationships of substances is important.

For information on the process used to prepare students for the task and on the materials and resources required, see the Teacher Package, reproduced on pages 152–158 of this document.