

**Southern New Mexico-West Texas Chemical Olympiad Competition
Instructions for Qualitative Analysis Team Experiment**

March 31st, 2012

Summary: Each team will be given nine dropper bottles, each containing an aqueous solution of one of the compounds listed below. The members of the team determine which solution is in each bottle by a procedure limited to mixing the solutions. (Students are not to physically touch, smell or taste the solutions). Each team is supplied with a nine well spot plate, a wash bottle and a data sheet.

Winning teams (1st, 2nd and 3rd place in each of the divisions) will be selected on the basis of the time required to make the correct assignments.

Substances in unknown aqueous solutions (one per dropper bottle)

- 0.5 M MgCl₂
- 0.03 M Fe(NH₄)₂(SO₄)₂ in 0.5 M H₂SO₄
- 0.01 M KMnO₄
- 0.5 M BaCl₂
- 0.8 M K₂CO₃
- 1.0 M Na₂SO₄
- 0.1 M KSCN
- 1.0 M NaOH
- 1.0 M HNO₃

Note: The compound Fe(NH₄)₂(SO₄)₂ is iron(II) ammonium sulfate or ferrous ammonium sulfate. The iron is in the +2 oxidation state.