1. CHEMICAL TESTS FOR CONTROLLED SUBSTANCES

A. The chemical tests described below are the same tests listed in the monographs for controlled substances.

Chemical Test	Procedure
Chen's	Place sample in a spot plate. Add 1-2 drops of 2% Na2CO3. Add 1-2 drops of 0.5% CuSO4. Observe color change. Test for: Diethylpropion, ephedrine/pseudoephedrine, methcathinone References: 13
Cobalt Nitrate	Add 1-2 drops of 1% Co(NO3)2 in methanol to dried sample. Observe color change. Test for: gamma-Hydroxybutyrate References: 12
Cobalt Thiocyanate	Place sample in a spot plate. Add 1-2 drops of 2% Co(SCN)2 and 1-2 drops of chloroform. Observe color extracted into chloroform. If no color is extracted into chloroform and sample is suspected cocaine base, add 1-2 drops of 0.1 N HCl. Observe color extracted into chloroform. Test for: Cocaine, cocaine base, ketamine, meperidine, methadone, methylphenidate, PCP analogs, phencyclidine, propoxyphene, propylhexedrine References: 1, 4, 7
Cobalt Thiocyanate solid	Place approximately 1 milliliter of liquid sample in a test tube. Add approximately 0.5 milliliter of chloroform. Vortex. Allow to separate and remove chloroform, (bottom layer). Be careful not to transfer the aqueous layer. Add a few drops of chloroform layer to a spot plate. Add a small amount of solid Co(SCN)2. Observe color change. Test for: γ-Hydroxybutyrolactone References: 15

Dille-Koppanyi	Place sample in a spot plate. Add 1-2 drops of 5% isopropylamine in methanol. Add 1-2 of 1% of Co(C2H3O2)2 in methanol. Observe color change. Test for: Barbiturates, glutethimide References: 1
Duquenois	Add 1-2 drops of duquenois reagent to previously identified marijuana or cannabis sample. Add 1-2 drops of conc. HCl. Observe color change. Add 1-2 drops of chloroform. Mix. Observe color extracted into chloroform. Test for: Marijuana, hashish, hash oil References: 2, 5, 6, 13
Ferric Chloride	Add 1-2 drops of 5% FeCl3 to dried sample. Observe color change. Test for: γ-Hydroxybutyrate References: 12, 13
Froehde's	Place sample in a spot plate. Add 1-2 drops of Froehde's reagent. Observe color change. Test for: Codeine, heroin, hydrocodone, hydromorphone, MDA, MDEA, MDMA, MMDA, mescaline, morphine, opium, oxycodone, PMA, PMMA, peyote, propoxyphene, 4-methyl-2,5-dimethoxyamphetamine (STP) References: 4, 13
Furfuraldehyde	Place sample in a spot plate. Dissolve sample in ethanol. Place 1 drop of the sample solution on a small piece of filter paper. Add 1 drop of 10% furfuraldehyde in ethanol. Expose the filter paper to conc. hydrochloric acid fumes for 2 to 3 minutes. Test for: Meprobamate References: 2
Gold Bromide in H_2SO_4/HOAc	Place sample on a microscope slide. Add 1 drop of 2:1 HOAc/H2O. Add 1 drop of AuBr3 in H2SO4. Scratch the surface of the slide. Observe crystals. Test for: Propoxyphene References: 4
Liebermann's	Place sample in a spot plate. Add 1-2 drops of Liebermann's reagent. Observe color change. Test for: Amphetamine, anabolic steroids, benzodiazepines, bufotenine, cathine, cocaine, codeine, diethylpropion, ephedrine/pseudoephedrine, glutethimide, heroin, hydrocodone, hydromorphone, ketamine, lysergic acid, MDA, MDEA, MDMA, MMDA, meperidine, mescaline, methadone, methamphetamine, methaqualone, methcathinone, methylphenidate, morphine, N,N-dimethylamphetamine, N-ethylamphetamine, opium, oxycodone, PMA, PMMA,

	peyote, phencyclidine, phentermine, propoxyphene, 4-methyl-2,5-dimethoxyamphetamine (STP) References: 2, 13
Marquis	Place sample in a spot plate. Add 1-2 drops of conc. H2SO4 and 1-2 drops of formaldehyde solution. Observe color change. Test for: Amphetamine, benzodiazepines, bufotenine, cathine, codeine, flunitrazepam, glutethimide, heroin, hydrocodone, hydromorphone, lysergic acid, MDA, MDEA, MDMA, MMDA, meperidine, mescaline, methamphetamine, morphine, N,N-dimethylamphetamine, N-ethylamphetamine, opium, oxycodone, oxymorphone, peyote, phentermine, propoxyphene, 4-methyl-2,5-dimethoxyamphetamine (STP), 4-bromo-2,5-dimethoxyphenethylamine References: 1, 2, 13
Mecke's	Place sample in a spot plate. Add 1-2 drops of Mecke's reagent. Observe color change. Test for: Bufotenine, codeine, heroin, hydrocodone, hydromorphone, MDA, MDEA, MDMA, MMDA, mescaline, morphine, opium, oxycodone, PMA, PMMA, peyote, propoxyphene, 4-methyl-2,5-dimethoxyamphetamine (STP) References: 4
Mercuric Chloride	Place sample on a microscope slide. Add 1 drop of 10% HCl. Add 1 drop of 10% HgCl2. Scratch the surface of the slide. Observe crystals. Test for: Propoxyphene References: 11

Resorcinol	Place sample in a test tube. Add water and mix. Add a small amount of resorcinol. Basify with 10% NaOH. Shake. Observe color change. Test for: Chloral hydrate References: 8
Silver Nitrate	Place sample in a test tube. Add methanol to non-liquid samples. Add 1-2 drops of 5% silver nitrate. Observe yellow ppt. Add 1-2 drops of conc. nitric acid. Ppt. should not dissolve. Test for: Iodine References: 9
Sodium Nitroprusside	Place sample in a spot plate. Add 1-2 drops of 2% Na_2CO_3. Add 1-2 drops of 1% sodium nitroprusside. Observe color change. Test for: MDEA, MDMA, methamphetamine, methylphenidate, N-ethylamphetamine, PMA, phentermine, propylhexadrine References: 10
Starch	Place sample in a test tube. Add methanol to solid samples. Add 1-2 drops of 1% starch. Observe color change. If no color change occurs, add 1 drop of conc. nitric acid. Observe color change. Test for: Iodine References: 9
Sulfuric Acid	Place sample in a spot plate. Add 1-2 drops of conc. H2SO4. Observe color change. Test for: Anabolic steroids, cathine, MDA, MDEA, MDMA, MMDA, 4-bromo-2,5-dimethoxyphenethylamine References: 2, 13

Van Urk's	Place sample in a spot plate. Add 1 drop of Van Urk's solution. Observe color change. Alternative procedure: Place a piece of untreated Whatman #1 chromatography paper in spot plate. Add 1-2 drops of Van Urk's solution. Place sample to the moist paper. Observe color change. May require evaporation of the solution. Test For: Bufotenine, LSD, lysergic acid, psilocyn/psilocybin References: 2, 13
Van Urk's	Place 1 drop of methanol in a spot plate. Add 1 drop of 50% H_2SO_4. Place one piece of Van Urk's treated paper in well so that paper absorbs liquid. Add sample to the moist paper. Observe color change.

	Test for: Bufotenine, LSD, lysergic acid, psilocyn/psilocybin References: 2, 13
Wagner's	Place sample in a spot plate. Add 1-2 drops of 0.1 N HCl. Add 1-2 drops of Wagner's reagent. Observe brown ppt. Test for: Cocaine, ketamine, PCP analogs, phencyclidine References: 1
Weber	Place ground fungal sample in spot plate. Add 2-3 drops of 0.1% Fast Blue B Salt solution. Observe color change. If red color develops, add 1-2 drops concentrated HCl. Sample will change from red to dark blue if psilocyn is present. Test for: psilocyn. Reference: 17

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