

MROCC EXAMINATION INFORMATION



Medical Review Officer
Certification Council

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The objective of the Medical Review Officer Certification Council (MROCC) is to recognize the competence of those physicians who have developed specialized knowledge and are proficient in the performance of the essential duties of the MRO. To this end, the MROCC examination has been designed to measure the fund of knowledge and practical skills that the MRO applies in the evaluation of workforce drug tests, whether performed in the regulated or private sector. MROCC certification is voluntary and is not a form of licensure. However, MRO certification is required for the medical review of federally regulated drug tests. MROCC has been approved by the US Department of Health and Human Services Secretary to offer MRO certification through examination. MROCC certification meets US Department of Transportation and US Department of Health and Human Services requirements for MRO qualification.

MROCC is a certification program created by the American College of Occupational and Environmental Medicine, the American Medical Association, the American Academy of Clinical Toxicology, the American College of Medical Toxicology, the College of American Pathologists, and the American Society of Addiction Medicine.

Initially developed under the direction of Wayne State University, the process of examination development has followed a comprehensive plan to ensure relevance, validity and reliability over the prior decades. Examination items have been developed and critically reviewed by nationally recognized leaders in drug testing drawn from the fields of occupational medicine, addiction medicine, forensic chemistry and toxicology and the legal profession. In addition, leading experts in educational measurement, evaluation and psychometrics have provided guidance to the process.

DESCRIPTION OF THE EXAMINATION

The examination consists of approximately 110 multiple choice test items, distributed by content area according to the examination blueprint, as established by the MROCC Board of Directors. The examination intermingles recall (recognition), simple interpretation (analysis), and problem solving (evaluation) types of questions. There is also a combination of "A" type, "X" type, and "M" type items (see examples at end of document).

Scores are determined based upon the total number of items answered correctly, with no penalty for guessing. Passing scores are not determined on the basis of subcategory scores.

The examinee should prepare for the examination by becoming familiar with the areas represented in the examination blueprint. However, this content outline is flexible in structure and subject to change to accommodate new content and shifts in emphasis. Broad based learning which establishes a general fund of knowledge and understanding of the concepts relevant to the duties of the MRO is the best preparation for this examination. A bibliography of useful references is included to assist the MRO in preparation for the examination.

While MRO training courses provide an adequate fund of knowledge to pass the MROCC examination, not every question on the examination will be covered as content in any one training course. Thus, supplementation of coursework with reading of the literature and sources in the bibliography can be helpful.

As a professional MRO distinguished by MROCC certification, the physician is expected to be an expert in drug and alcohol testing, and the application of federal regulations and private sector programming to the process. However, the expectation goes beyond a mere understanding of the mechanisms of interpreting a test and assuring proper chain of custody. The professional MRO may also be called upon to serve as a consultant to clinical colleagues, business, industry, labor, government or academia on issues relating to prevention, detection and control of substance misuse. Thus, there may be a minority of examination questions that are less directly tied to the traditional MRO role of drug test interpretation, expanding into the broader fund of knowledge of the physician serving as a consultant on substance abuse issues.

A few additional comments and tips for those preparing to take the MROCC examination:

- Drug testing is an expanding and diverse field. MRO training courses, through lectures and readings, will cover the vast majority of questions on the exam. However, the full domain of important issues cannot be neatly packaged in any course or set of readings.
- A good examination strategy is to go through the exam once at a reasonable pace without lingering on items that you are not sure about -- flag those and come back to them later.
- Caution: When taking the paper exam, if the responses on your answer sheet get out of order for a single item, you can have a long string of incorrect responses. Thus, enter your responses carefully.
- There is no penalty for guessing, so it is to your advantage to avoid leaving any items blank.

Scoring and Notification

State of the art psychometric procedures are employed for scoring and the determination of the minimum passing level. Scoring is criterion based with adjustment for the varying difficulty of each examination. Standards are set and equating is performed using similar procedures as those used by Educational Testing Service, the National Board of Medical Examiners and other certifying bodies.

Publication of Certified MROs

A searchable directory of currently-certified MROs is available on the MROCC website, <https://www.mrocc.org/search.cfm>. This directory assists employers and others in need of MRO services in identifying physicians who are distinguished by MROCC certification.

MROCC EXAMINATION COMPETENCIES, TOPICS & REFERENCES

The following summarizes the competency areas covered on the MROCC examination, along with the rough percentage of questions representing each of the competency areas. To aid the examinee, specific topics within these competency areas are noted and selected references are provided for examinee preparation. Because federal drug testing programs such as those of the U.S. Department of Transportation (DOT) and the U.S. Department of Health and Human Services (HHS) set the gold standard for drug testing, this examination emphasizes DOT and HHS regulations, and other federal guidelines. However, questions will cover expanded, non-regulated drug panels, alternative specimens, drug testing outside of the workplace, and other substance misuse topics that may go beyond the scope of federal regulations and drug test interpretation.

The MRO operates in a dynamic, multidisciplinary environment. The MRO should have a general knowledge of many issues in the areas of substance use and detection. In addition to knowing about the mechanics of reporting a drug test result, the full domain cannot be neatly packaged in any single course on the subject or set of readings. Thus, although this bibliography may cover the preponderance of the material appearing on the examination, questions may also be selected from other reference sources. In general, those individuals carefully preparing themselves utilizing the bibliography should be prepared to perform well on the examination. We encourage each examinee to take advantage of the online resources by reviewing the websites that are listed below and linking to sites that may provide invaluable information during preparation for the examination. Our experience is that those failing the examination may have attended a training course but have not spent an adequate amount of time preparing by careful review of available reference material. It is highly recommended that you review [49 CFR Part 40 MRO Regulations](#), the [HHS Mandatory Guidelines for Federal Workplace Testing Programs](#), and any course materials prior to attending the course and attempting the examination. This will allow you to have a clearer understanding of the course and help you to achieve a successful examination outcome.

Drug testing is a rapidly changing field. While some of the older references on this list may contain much useful information, be careful to be knowledgeable of the most recent scientific and regulatory information. Note that where a periodically updated reference is listed without a publication date, the most recent published version should be used.

I. SUBSTANCE USE DISORDERS (5%)

COMPETENCY STATEMENT:

Although the skills of the MRO may be quite different from those of the addiction medicine specialist, the MRO must be knowledgeable about and have clinical experience in the field of substance use disorders. MROs may be called upon to be a general resource for substance use issues. General knowledge in the area of addictive disorders will enable the MRO to:

- recognize the public health implications of inappropriate substance use.
- recognize the clinical and behavioral signs of substance use disorders.
- recognize problems of prescription drug use, misuse and overuse, including the use of opioids and non-DOT regulated prescription drugs.
- describe the natural history and epidemiology of substance use disorders.
- interact effectively with assessment and treatment professionals in the management of individuals identified with alcohol and/or substance use disorders, and workplace prevention and control programs for inappropriate substance use.
- serve as a resource to the employer on issues of aftercare monitoring, return-to-work and medical qualifications for the performance of safety sensitive tasks.

TOPICS ON EXAMINATION:

- Behavioral aspects of drug/alcohol use and misuse
- Substance use disorders
- Impact of substance use disorders on the workplace
- Employee assistance programs and rehabilitation
- Epidemiology of substance use disorders and drug/alcohol testing
- SAP evaluation
- Return to work determinations
- Compliance/follow-up testing

REFERENCES:

Swotinsky RB, *The Medical Review Officer's Manual*. Beverly Farms, MA, OEM Press, 6th ed. 2021, pages 229-292.

Peterson KW, American College of Occupational and Environmental Medicine, Drug and Alcohol Testing *Medical Review Officer Course Syllabus and Resource Manual*, updated annually. Sections on chemical dependency.

SAMHSA's National Survey on Drug Use & Health, Office of Applied Studies. <https://www.samhsa.gov>

U.S. DOT Office of Drug and Alcohol Policy and Compliance, "Substance Abuse Professional Guidelines", Washington, DC. <https://www.transportation.gov/odapc>

SAMHSA's Direct Division of Workplace Programs/CSAP link: <https://www.samhsa.gov/workplace>

II. REGULATORY ISSUES AND MRO ROLE (50%)

COMPETENCY STATEMENT:

The MRO must be and remain knowledgeable about HHS Mandatory Guidelines, and DOT and DOT Agency regulations which impact organizations for whom the MRO evaluates drug test results. The MRO is often called upon to assist clients in the implementation of legally defensible policies and programs. Therefore, the MRO must be able to advise organizations about both regulated and non-regulated drug and alcohol testing procedures.

Knowledge in the area of regulatory issues and MRO responsibilities will enable the MRO to:

- interact effectively with other program participants, including employees, employers, DERs, SAPs, TPAs, prescribing physicians, other health care workers, laboratories and collection sites.
- advise employers in the development and implementation of effective workplace substance misuse prevention program policies and procedures in both regulated and private sector settings.
- comply with applicable laws and federal regulations in the review, interpretation and reporting of drug test results, including confidentiality, documentation, record maintenance and storage, and release of information.
- develop a standard operating procedure for conducting an effective MRO interview which complies with applicable regulations.
- recognize and address the major legal and regulatory issues that face the MRO, other service providers and employers in the establishment and implementation of drug testing programs.
- serve as an expert consultant or witness on matters involving drug testing.
- adhere to and uphold the professional code of ethics relating to drug testing.
- evaluate and help manage collector services, laboratory services, and other services in the program to ensure reliability, confidentiality, efficiency, appropriateness, and promptness of these services in response to the employer's needs.

TOPICS ON EXAMINATION:

- MRO Role in federal testing programs
- Federal regulations & programs (DOT, DOT Agencies, HHS, NRC, etc.)
- Communication & reporting of results to employers, employees & other participants (DERs, SAPs, TPAs, etc.)
- Recordkeeping
- Company Xfi [!ZY k cf_force policies
- Medical-Legal issues
- Confidentiality

REFERENCES:

Swotinsky RB, *The Medical Review Officer's Manual*. Beverly Farms, MA, OEM Press, 6th ed. 2021, pages 1-47; 139-198; 211-225; 315-324.

Peterson KW, American College of Occupational and Environmental Medicine, Drug and Alcohol Testing *Medical Review Officer Course Syllabus and Resource Manual*, updated annually. Sections on regulatory issues and MRO responsibilities.

U.S. DOT Office of Drug and Alcohol Policy and Compliance, "Procedures for Transportation Workplace Drug Testing Programs" Title 49, Code of Federal Regulations, Part 40. Washington, DC, <https://www.transportation.gov/odapc>

U.S. DOT Office of Drug and Alcohol Policy and Compliance, "Q & A's", Title 49, Code of Federal Regulations, Part 40. Washington, DC, <https://www.transportation.gov/odapc>

"Mandatory Guidelines for Federal Workplace Drug Testing Programs", Department of Health and Human Services <https://www.samhsa.gov/workplace>

SAMHSA, "Medical Review Officer Guidance Manual for Federal Workplace Drug Testing Programs": <https://www.samhsa.gov/workplace>

MRO Code of Ethics; Established by the Medical Review Officer Certification Council Board of Directors, July 15, 2003; updated 5/10/2021; <https://www.mrocc.org/code.pdf>

U.S. DOT Employer Guide: <https://www.transportation.gov/odapc>

III. TOXICOLOGY, PHARMACOLOGY AND LABORATORY ISSUES (20%)

COMPETENCY STATEMENT:

The MRO must be knowledgeable of the toxicology and pharmacology of frequently misused substances. While the MRO is not a laboratory director, the MRO must know what goes on in the laboratory and how quality is assured. Knowledge in these areas will enable the MRO to:

- recognize and describe the pharmacokinetics/toxicokinetics of drugs (both regulated and non-DOT regulated) and alcohol.
- recognize both trade names and generic names for substances that are likely to appear in a DOT or non-DOT drug screen, interfere with a drug test, or be presented to the MRO as a donor explanation for a positive drug test.
- recognize the appropriate analytical methods for drug and alcohol screening and confirmation, and properly interpret results, with consideration of limits of detection, sensitivity, specificity, limitations, interferences, cost and availability.
- advise clients regarding the use of various matrices and technologies for drug testing.
- provide consultation to clients regarding testing for substances of abuse including both regulated and non-DOT regulated drugs, including prescription substances, non-prescription substances, cotinine (nicotine) and alcohol.
- describe laboratory QA, QC, and certification requirements to an employer or other interested party.
- efficiently transmit and receive drug test data and information while maintaining donor confidentiality.
- evaluate laboratory findings relating to specimen validity.
- recognize the basic types and mechanisms of action of performance enhancing drugs.

TOPICS ON EXAMINATION:

- Pharmacology and toxicology of drugs of abuse and alcohol
- Analytical methods, new technologies
- Laboratory quality control and chain of custody
- Laboratory certification
- Laboratory communication with the MRO
- Alcohol testing (analytical issues)
- Specimen validity testing

REFERENCES:

Swotinsky RB, *The Medical Review Officer's Manual*. Beverly Farms, MA, OEM Press, 6th ed. 2021, pages 89-138; 201-225.

Peterson KW, American College of Occupational and Environmental Medicine, Drug and Alcohol Testing *Medical Review Officer Course Syllabus and Resource Manual*, updated annually. Sections on toxicology, pharmacology and laboratory issues.

National Laboratory Certification Program (NLCP). Drug Testing Matters. <https://forensicrti.org/nlcp/drug-testing-matters/>

IV. CLINICAL ASPECTS (10%)

COMPETENCY STATEMENT:

The MRO must be familiar with clinical issues related to drug and alcohol use and testing, including medical explanations for non-negative tests and medical qualifications for performance safety sensitive tasks. Knowledge in these clinical areas will enable the MRO to:

- recognize clinical evidence of drug misuse.
- evaluate alternative medical explanations for laboratory drug test results (including positive, substituted, adulterated, invalid and dilute specimens).
- evaluate the inability to produce a specimen.
- recognize and appropriately respond to conditions which may render an individual unfit and/or unqualified for duty, including: (1) unauthorized drug use, (2) authorized prescription or over-the-counter drug use, (3) substance use disorders, and (4) illness.

TOPICS ON EXAMINATION:

- Acceptable medical explanations
- Clinical assessment of drug use, misuse and impairment
- Determination of fitness for duty
- Inadequate specimen volume

REFERENCES:

Swotinsky RB, *The Medical Review Officer's Manual*. Beverly Farms, MA, OEM Press, 6th ed. 2021, pages 229-292.

Peterson KW, American College of Occupational and Environmental Medicine, Drug and Alcohol Testing *Medical Review Officer Course Syllabus and Resource Manual*, updated annually. Sections on clinical aspects.

U.S. DOT Office of Drug and Alcohol Policy and Compliance, "Substance Abuse Professional Guidelines", Washington, DC. <https://www.transportation.gov/odapc>

V. COLLECTIONS AND PROCEDURES (15%)

COMPETENCY STATEMENT:

Although MROs do not routinely collect specimens, they must thoroughly understand collection procedures and chain of custody issues, as well as correctable and fatal flaws. Knowledge in the area of collections and procedures will enable MROs to:

- describe and apply appropriate procedures for specimen collections, including observed and unobserved, split specimen, insufficient quantity collections, and urine testing, oral fluid testing, hair testing, blood testing, sweat testing, etc.
- describe and apply appropriate procedures for the use of custody and control forms.
- identify and address procedural errors.
- describe and apply appropriate procedures for alcohol testing.
- serve as a consultant to BATs, STTs and employers on alcohol testing procedures.

TOPICS ON EXAMINATION:

- Collection procedures for specimens
- Observed and unobserved collections
- Custody and control forms and chain of custody
- Split specimen procedures
- Problems in drug tests including fatal and correctable flaws
- Types of testing (applicant, periodic, random, for-cause, etc)
- Alcohol testing (BAT issues)

REFERENCES:

Swotinsky RB, *The Medical Review Officer's Manual*. Beverly Farms, MA, OEM Press, 6th ed. 2021, pages 49-87.

Peterson KW, American College of Occupational and Environmental Medicine, Drug and Alcohol Testing *Medical Review Officer Course Syllabus and Resource Manual*, updated annually. Sections on collections and procedures.

U.S. DOT Office of Drug and Alcohol Policy and Compliance, "Urine Specimen Collection Guidelines", Washington, DC. <https://www.transportation.gov/odapc>

SAMHSA, "Urine Specimen Collection Handbook for Federal Workplace Drug Testing Programs". <https://www.samhsa.gov/workplace>

SAMHSA, "Oral Fluid Specimen Collection Handbook for Federal Workplace Drug Testing Programs". <https://www.samhsa.gov/workplace>

ADDITIONAL SUGGESTED REFERENCES & ONLINE RESOURCES FOR PRACTICING MROS

MROCC website: <https://www.mrocc.org>

Medical Review Officer Certification Council (MROCC). MRO Quarterly Newsletter. <https://mrocc.org/newsletters.cfm>

MRO List Server (moderated by Dr. Karl Auerbach) – to subscribe, send an email to MROLISTSERVE@GMAIL.com with the subject "SUBSCRIBE MRO"

Ferguson J, *The Medical Review Officer Team Manual*. Beverly Farms, MA, OEM Press, 2nd ed., 2013.

Ropero-Miller JD, Goldberger BA, et al, *Handbook of Workplace Drug Testing*, AACC Press, 2nd ed. 2008.

U.S. DOT ODAPC List Server: https://www.transportation.gov/odapc/ListServe_Notices

U. S. Department of Transportation, Office of Drug and Alcohol Policy and Compliance: <https://www.transportation.gov/odapc>

SAMHSA's Direct Division of Workplace Programs/CSAP link: <https://www.samhsa.gov/workplace/>

GPO Gate – Free source of Federal Register documents: <https://www.gpo.gov/fdsys>

SAMPLE TEST ITEMS (more available on MROCC website):

"A" type (single best answer):

Each of the questions or incomplete statements below is followed by four or five response options. Select the **ONE BEST RESPONSE** in each case and completely fill in the circle containing the corresponding letter on the score sheet.

1. Testing for which of the following drugs of abuse is **NOT** required by Department of Transportation mandated drug testing programs?
 - a. Marijuana
 - b. Phencyclidine
 - c. Opiates
 - d. Barbiturates
 - e. Amphetamines

Answer: d

"X" type (multiple true/false):

Each of the questions or incomplete statements below is followed by four or five response options. **One, more than one, or all may be correct.** Select all correct responses, and completely fill in the circle(s) containing the corresponding letter(s) on the score sheet.

2. Which of the following drug matrices may be used for preemployment drug testing of a truck driver under DOT?
 - a. Urine
 - b. Hair
 - c. Oral Fluid
 - d. Sweat
 - e. Breath

Answer: a, c

*Note that the "X" type item is essentially a multiple true-false item. While the use of this item architecture may be unfamiliar and difficult for some examinees, statistical reliability is enhanced when the "X" type items are added to the "A" type items. Examinees should note that the difficulty of each examination is adjusted in the scoring process, and that on the average, the use of the "X" type item will not reduce an examinee's overall likelihood of passing the examination. This replaces the older "K" type item (a = 1,2&3 are correct; b=2&4 are correct, etc.), which psychometric research has determined to be unreliable. The "K" type item incorporated logical clues creating guessing advantages and reducing the item's value in testing the subject matter. Most boards no longer use the familiar "K" type item.

Additional note: While some physicians may opine that marijuana can be legitimately recommended for treatment of pain, and in many states can be obtained legally, marijuana remains a Schedule I drug and thus cannot be "prescribed".

"M" type (matching):

This section consists of a list of four or five lettered response options followed by several numbered items. **For each numbered item, select the single best response option. A lettered option, however, may be selected once, more than once, or not at all.**

Items 3-4:

Response options:

- a. Marijuana
- b. Phencyclidine
- c. Opiates
- d. Benzodiazepines
- e. Cocaine

3. Frequently associated with injected conjunctivae, an odor of burning leaves and a temporary increase in appetite.

Answer: a

4. Commonly prescribed for the short-term treatment of anxiety.

Answers: d