Policy for Testing of Alcohol (Ethanol) and Isopropyl Alcohol for Methanol

Guidance for Industry

This guidance is for immediate implementation.

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For questions regarding this document, contact (CDER) Office of Compliance at 301-796-3400.

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Drug Evaluation and Research (CDER)
Center for Biologics Evaluation and Research (CBER)
Center for Veterinary Medicine (CVM)

October 2023
Current Good Manufacturing Practice (CGMP)

Policy for Testing of Alcohol (Ethanol) and Isopropyl Alcohol for Methanol

Guidance for Industry

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Contains Nonbinding Recommendations

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Contains Nonbinding Recommendations

Policy for Testing of Alcohol (Ethanol) and Isopropyl Alcohol for Methanol Guidance for Industry[1]

This guidance represents the current thinking of the Food and Drug Administration (FDA or Agency) on this topic. It does not establish any rights for any person and is not binding on FDA or the public. You can use an alternative approach if it satisfies the requirements of the applicable statutes and regulations. To discuss an alternative approach, contact the FDA office responsible for this guidance as listed on the title page.

I. INTRODUCTION

This guidance is intended to alert pharmaceutical manufacturers[2] and pharmacists in State-licensed pharmacies or Federal facilities who engage in drug compounding[3] to the potential public health hazard of alcohol (ethyl alcohol or ethanol) or isopropyl alcohol contaminated with or substituted with methanol. During the Coronavirus Disease 2019 (COVID-19) public health emergency (PHE),[4] the Food and Drug Administration (FDA) became aware of reports of fatal methanol poisoning of consumers who ingested alcohol-based hand sanitizer products that were manufactured with methanol or methanol-contaminated ethanol.[5] FDA has also received numerous reports of dermal toxicity associated with such products.

FDA also is concerned that other drug products containing ethanol or isopropyl alcohol (pharmaceutical alcohol[6]), which are widely used ingredients in a variety of drug products, could

[1] This guidance has been prepared by the Center for Drug Evaluation and Research in cooperation with the Center for Biologics Evaluation and Research and the Center for Veterinary Medicine at the Food and Drug Administration.
[2] For the purposes of this guidance, references to *manufacturers* include registered outsourcing facilities because outsourcing facilities are subject to current good manufacturing practice requirements. See section 503B(a) of the Federal Food, Drug, and Cosmetic Act (FD&C Act); see also the draft guidance for industry *Current Good Manufacturing Practice — Guidance for Human Drug Compounding Outsourcing Facilities Under Section 503B of the FD&C Act* (January 2020). When finalized, this guidance will represent the FDA's current thinking on this topic. For the most recent version of a guidance, check the FDA guidance web page at https://www.fda.gov/regulatory-information/search-fda-guidance-documents. References to *manufacturers* also include repackers, relabelers, and suppliers of alcohol.
[3] See section 503A of the FD&C Act (21 U.S.C. 353a).
[4] The Department of Health and Human Services (HHS) Public Health Emergency Declaration is available at https://www.phe.gov/emergency/news/healthactions/phe/Pages/2019-nCoV.aspx.
[5] Yip L, Bixler D, Brooks DE, et al., 2020, Serious Adverse Health Events, Including Death, Associated With Ingesting Alcohol-Based Hand Sanitizers Containing Methanol — Arizona and New Mexico, May–June 2020, MMWR Morb Mortal Wkly Rep, 69(32):1070–1073, doi: http://dx.doi.org/10.15585/mmwr.mm6932e1external icon.
[6] For the purposes of this guidance, we use the term *pharmaceutical alcohol* to mean either ethanol (ethyl alcohol) or isopropyl alcohol (2-propanol). Both are used as an active ingredient in alcohol-based hand sanitizer products and are used in other drug products as an active or inactive ingredient.

be similarly vulnerable to methanol contamination. For example, certain inhalation products, mouthwashes, cough and cold products, and many topical drug products include pharmaceutical alcohol. As the COVID-19 pandemic increased the demand for hand sanitizer products, the demand for pharmaceutical alcohol as the active ingredient of those products also increased. In the past, increased stress on supply chains has made ingredients more vulnerable to economically motivated adulteration.

For these reasons, the policy outlined in this guidance applies to pharmaceutical alcohol used as an active or inactive ingredient in a drug product regardless of whether the drug product is a hand sanitizer product. This policy will help pharmaceutical manufacturers and pharmacists who engage in drug compounding avoid using pharmaceutical alcohol contaminated with or substituted with methanol in drug products.[7]

This guidance replaces the guidance for industry *Policy for Testing Alcohol (Ethanol) and Isopropyl Alcohol for Methanol, Including During the Public Health Emergency (COVID-19)* published in January 2021.[8]

In general, FDA's guidance documents do not establish legally enforceable responsibilities. Instead, guidances describe the Agency's current thinking on a topic and should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited. The use of the word *should* in Agency guidances means that something is suggested or recommended, but not required.

[7] In this guidance, the terms *drug* and *drug product* include both human and animal drugs and biological products.

[8] The Agency issued this guidance in January 2021 to communicate its policy for the duration of the PHE declared by the HHS Secretary on January 31, 2020, including any renewals made by the HHS Secretary in accordance with section 319(a)(2) of the Public Health Service Act (42 U.S.C. 247d(a)(2)). As stated in the 2021 guidance, at such time when the PHE was over, as declared by the Secretary, FDA intended to reassess this guidance. The COVID-19 PHE ended May 11, 2023. See the HHS COVID-19 PHE web page at https://www.hhs.gov/coronavirus/covid-19-public-health-emergency/index.html#:~:text=Based%20on%20current%20COVID%2D19,day%20on%20May%2011%2C%202023.

II. BACKGROUND

On January 31, 2020, the Secretary for Health and Human Services (HHS) issued a declaration of a PHE related to COVID-19 and mobilized the Operating Divisions of HHS.[9] In addition, on March 13, 2020, the President declared a national emergency in response to COVID-19.[10] Although the COVID-19 PHE ended May 11, 2023,[11] FDA has determined that the policy in this guidance still applies.

Since the beginning of the COVID-19 PHE, FDA observed an increase in reports of serious adverse events, including deaths, related to ingestion (both unintentional and intentional) of alcohol-based hand sanitizer products. FDA also received numerous reports of dermal toxicity associated with such products. In the spring of 2020, FDA began finding numerous hand sanitizer products that were labeled to contain ethanol but tested positive for methanol contamination, and the drinking of some of these hand sanitizer products resulted in methanol poisoning. In some instances, manufacturers of hand sanitizer products labeled their products as containing methanol, even though methanol is not an acceptable ingredient in any drug product.[12] At the same time, methanol was detected in hand sanitizer products from multiple manufacturers through the screening and sampling of hand sanitizer products being imported into the United States.[13]

FDA has reviewed many methanol substitution and/or contamination cases, and our investigation revealed the following commonalities and trends among these cases:

- Multiple manufacturers, while manufacturing hand sanitizer products, were neither complying with drug current good manufacturing practice (CGMP) requirements under section 501(a)(2)(B) of the Federal Food, Drug, and Cosmetic Act (FD&C Act)[14] nor

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[9] Secretary of HHS Alex M. Azar II, Determination that a Public Health Emergency Exists (originally issued January 31, 2020, and subsequently renewed), available at https://www.phe.gov/emergency/news/healthactions/phe/Pages/default.aspx.

[10] Proclamation on Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak (March 13, 2020), available at https://trumpwhitehouse.archives.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/. On February 24, 2021, there was a Presidential Declaration continuing the national emergency concerning the COVID-19 pandemic beyond March 1, 2021. See Continuation of the National Emergency Concerning the Coronavirus Disease 2019 (COVID-19) Pandemic (Feb. 24, 2021), available at https://www.federalregister.gov/documents/2021/02/26/2021-04173/continuation-of-the-national-emergency-concerning-the-coronavirus-disease-2019-covid-19-pandemic. The national emergency related to the COVID-19 pandemic ended on April 10, 2023. See the Joint Resolution Terminating a National Emergency, available at https://www.congress.gov/118/plaws/publ3/PLAW-118publ3.pdf.

[11] See footnote 8.

[12] Methanol is not an acceptable ingredient in any drug product and should not be used due to its toxic effects (see p. 5). See, for example, 21 CFR 330.1(e) (requiring that inactive ingredients in over-the-counter (OTC) monograph drug products be safe and suitable); see also Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health web page for methanol https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750029.html.

[13] See the FDA Updates on Hand Sanitizers Consumers Should Not Use web page at https://www.fda.gov/drugs/drug-safety-and-availability/fda-updates-hand-sanitizers-methanol.

[14] Manufacturers of drugs, as defined in section 201(g) of the FD&C Act (21 U.S.C. 321(g)), must comply with drug CGMP requirements in section 501(a)(2)(B) of the FD&C Act (21 U.S.C. 351(a)(2)(B)) and, for finished drug products, the regulations at 21 CFR parts 210 and 211 as well.

manufacturing their products in a manner consistent with FDA's temporary policies for alcohol-based hand sanitizer products.[15]

- Many manufacturers of the hand sanitizer products in which the ethanol was contaminated with methanol or was substituted with methanol did not perform any testing or performed inadequate testing[16] on the ethanol component, including tests to verify the purity of the ethanol lots received and to quantify the amount of methanol present.

- Many of the manufacturers of hand sanitizer products failed to adequately test each incoming component lot for identity,[17] as well as to properly evaluate identity testing data.

- The testing performed on incoming lots of the ethanol active pharmaceutical ingredient (API) by some firms was inadequate to detect that methanol (i.e., methanol at levels exceeding allowable limits)[18] was present, either as a contaminant or as an intentional substitution. In other instances, the firms lacked testing of their incoming ethanol API altogether.

- Many of the manufacturers of hand sanitizer products in which the ethanol was contaminated with methanol or substituted with methanol relied on the certificate of analysis (COA) provided by the ethanol supplier, or a test result sheet provided by the supplier, without adequately validating the supplier's COA.[19]

- The origin of the ethanol used in the products was not readily apparent to many firms manufacturing hand sanitizer products. When queried about how they had qualified

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[15] On December 31, 2021, FDA withdrew the following three guidances for industry because the Agency determined that the temporary policies were no longer needed to meet the demand for alcohol-based hand sanitizer products (*Federal Register* document (86 FR 56960) published Oct 13, 2021): *Temporary Policy for Preparation of Certain Alcohol-Based Hand Sanitizer Products During the Public Health Emergency (COVID-19)*; *Policy for Temporary Compounding of Certain Alcohol-Based Hand Sanitizer Products During the Public Health Emergency*; and *Temporary Policy for Manufacture of Alcohol for Incorporation Into Alcohol-Based Hand Sanitizer Products During the Public Health Emergency (COVID-19)*.

[16] To comply with CGMP regulations, each component of a drug product shall be tested for conformity with all appropriate written specifications for purity, strength, and quality, unless the certificates of analysis provided by suppliers have been appropriately validated (21 CFR 211.84(d)(2)).

[17] To comply with CGMP regulations, identity testing must be conducted to verify each component of a drug product (21 CFR 211.84(d)(1)). Under that provision, specific identity tests, if they exist, must be used. Identity testing confirms that the component is what it is labeled to be. A component's identity can be described as its chemical structure and its physical form (e.g., polymorph, solvate, appearance) including, if appropriate, its stereochemistry or immunochemistry. See the guidance for industry *Questions and Answers on Current Good Manufacturing Practices — Control of Components and Drug Product Containers and Closures* at https://www.fda.gov/drugs/guidances-drugs/questions-and-answers-current-good-manufacturing-practices-control-components-and-drug-product. In addition, a drug with a name recognized in the United States Pharmacopeia-National Formulary (USP-NF) must comply with compendial identity standards or be deemed adulterated, misbranded, or both (section 501(b) (21 U.S.C. 351(b)) and 502(e)(3)(B) and (g) of the FD&C Act (21 U.S.C. 352e(3)(B) and (g)); see also 21 CFR 299.5(a) and (b)). In such cases, the identity is determined by the official tests, procedures, and acceptance criteria in the applicable USP-NF monograph. See USP-NF General Notices 2.30.

[18] See 21 CFR 211.160; see also footnote 21.

[19] See footnote 16.

ethanol suppliers used in the manufacture of contaminated hand sanitizer products, many hand sanitizer manufacturers could not identify the true source of the alcohol used in their hand sanitizer production.[20]

- Ethanol contaminated with or substituted with methanol was seen in hand sanitizer products imported into the United States from multiple countries. FDA is also aware of reports of methanol substitution in hand sanitizer products distributed in several countries outside the United States. FDA is also aware of methanol substitution for pharmaceutical alcohol outside of hand sanitizer production.

As a result of these various practices, methanol-contaminated ethanol and hand sanitizer products contaminated with or substituted with methanol have entered the pharmaceutical supply chain. FDA is concerned that other drug products containing pharmaceutical alcohol could be similarly vulnerable to methanol contamination, including drugs in oral dosage form presentations. For these reasons, the policy outlined in this guidance applies to pharmaceutical alcohol used as an active or inactive ingredient of a drug regardless of whether the drug product is a hand sanitizer product.

Methanol is not an acceptable ingredient in any drug product and should not be used because of its toxic effects. When methanol is present as an impurity in a component of a drug that is recognized in an official compendium, it must be below acceptable maximum levels set forth in the official compendium (e.g., in a United States Pharmacopeia (USP) monograph) for the drug to meet applicable quality standards and specifications.[21] Skin exposure to methanol can cause dermatitis, as well as transdermal absorption with systemic toxicity. Substantial methanol exposure can result in nausea, vomiting, headache, blurred vision, permanent blindness, seizures, coma, permanent damage to the nervous system, or death. Although all persons using drugs contaminated with methanol via any route are at risk of methanol toxicity, oral or systemic administration of methanol may lead to death. We are aware of reports of young children who unintentionally ingest hand sanitizer products and adolescents and adults who drink these products as an ethanol substitute.[22] [23] When the pharmaceutical alcohol in hand sanitizer

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[20] In previous instances of contamination for other drug products (e.g., diethylene glycol in glycerin), a similar pattern was observed. The COA for glycerin obtained by the pharmaceutical manufacturers was often a copy of a COA on the letterhead of the distributor and not the COA provided by the manufacturer of the glycerin. The chain of custody or distribution history of the glycerin was also not readily known because the glycerin may have been sold several times between its manufacture and its use in medicinal syrup or other drug products. See the guidance for industry *Testing of Glycerin, Propylene Glycol, Maltitol Solution, Hydrogenated Starch Hydrolysate, Sorbitol Solution, and other High-Risk Drug Components for Diethylene Glycol and Ethylene Glycol* (May 2023).

[21] Section 501(b) of the FD&C Act. The USP is an official compendium and its monographs establish identity testing for drugs listed therein in addition to tests and methods for strength, quality, and purity for those products. See sections 201(g)(1) and (j) and 501(b) of the FD&C Act. To meet the requirements of the USP monographs for alcohol (ethyl alcohol or ethanol) and isopropyl alcohol for use in an application product (i.e., a new drug application, abbreviated new drug application, biologics license application, new animal drug application, or abbreviated new animal drug application) or a product marketed in conformity with an OTC drug monograph, the product must contain no more than 200 parts per million of methanol.

[22] McCulley L, Cheng C, Mentari E, et al., 2020, Alcohol-Based Hand Sanitizer Exposure and Effects on Young Children in the U.S. During the COVID-19 Pandemic, Clin Toxicol (Phila), epub ahead of print Aug 27, 2020, doi: https://doi.org/10.1080/15563650.2020.1811298.

[23] Santos C, Kieszak S, Wang A, et al., 2017, Reported Adverse Health Effects in Children from Ingestion of Alcohol-Based Hand Sanitizers — United States, 2011–2014, MMWR Morb Mortal Wkly Rep, 66(8):223–226.

products is contaminated with or substituted with methanol, people who have ingested the hand sanitizer product are most at risk for serious methanol poisoning.

III. POLICY ON TESTING FOR METHANOL

Because of the serious hazards associated with methanol, to prevent pharmaceutical alcohol used in drug products from being contaminated with or substituted with methanol, it is critical that all pharmaceutical manufacturers, as well as pharmacists who engage in drug compounding using pharmaceutical alcohol, are aware of the importance of properly testing pharmaceutical alcohol to detect methanol contamination or substitution.

A. Drug Products, Generally

Manufacturers of drugs are subject to CGMP requirements under section 501(a)(2)(B) of the FD&C Act and, for finished drug products, the regulations at 21 CFR parts 210 and 211 as well. These drug products include those marketed under a new drug application, abbreviated new drug application, drug products marketed in conformity with an over-the-counter (OTC) drug monograph,[24] drug products manufactured by outsourcing facilities,[25] and others. Compliance with drug CGMP requirements includes certain analytical testing procedures that must be performed on all lots of pharmaceutical alcohol before use in drug manufacturing.[26] As described below, manufacturers of drug products that include pharmaceutical alcohol must perform a specific identity test that includes a limit test for methanol, on each container within each shipment of each lot of pharmaceutical alcohol before the component is used in the manufacture or preparation of drug products.[27] [28]

The USP monographs for alcohol (ethyl alcohol or ethanol) and isopropyl alcohol establish a limit for methanol in alcohol of 200 parts per million (ppm). Therefore, any ethanol or isopropyl alcohol found to contain more than 200 ppm methanol is considered adulterated under section

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[24] Certain nonprescription drug products (commonly referred to as *OTC drugs*) can be legally marketed without review and approval of a product-specific premarket application under section 505 of the FD&C Act (21 U.S.C. 355) if they satisfy applicable requirements under section 505G of the FD&C Act. The requirements in section 505G for marketing OTC monograph drugs include conformity with applicable conditions of nonprescription use for the drug or class of drug, such as specified active ingredients and dosage strengths. Such drugs also must meet the general requirements for nonprescription drugs, which include requirements that these drugs contain only safe and suitable inactive ingredients and be manufactured according to CGMP. See, for example, 21 CFR 330.1(a).

[25] See the draft guidance for industry *Current Good Manufacturing Practice — Guidance for Human Drug Compounding Outsourcing Facilities Under Section 503B of the FD&C Act*.

[26] 21 CFR 211.84(d).

[27] The CGMP regulations at 21 CFR 211.84(d) require that each lot of a component undergo testing to confirm its identity before use in drug product manufacturing. A specific identity test must be used. In addition, a drug with a name recognized in USP-NF, such as alcohol, must comply with compendial identity standards or be deemed adulterated, misbranded, or both. (See section 501(b) and 502(e)(3)(B) and (g) of the FD&C Act; see also 21 CFR 299.5(a) and (b).) In such cases, the identity is determined by the official tests, procedures, and acceptance criteria in the applicable USP-NF monograph. See USP-NF General Notices 2.30.

[28] 21 CFR 211.84(b). Knowledge of shipping controls can help in the determination of a representative sample. See, for example, section XVII (17) of the International Council for Harmonisation guidance for industry *Q7 Good Manufacturing Practice Guidance for Active Pharmaceutical Ingredients* (September 2016).

501(b) of the FD&C Act because its quality or purity falls below the standards prescribed in the USP.

On July 30, 2020, FDA sent a request to the USP to include a test for methanol in the Identification sections of the alcohol, isopropyl alcohol, and any related USP-National Formulary (NF) monographs to help prevent methanol contamination.[29] On July 31, 2020, the USP posted a Notice of Intent to Revise for the Alcohol Monograph and the Dehydrated Alcohol Monograph to include the test for Limit of Methanol as an additional Identification C Test.[30] On September 1, 2020, the revised Alcohol Monograph and Dehydrated Alcohol Monograph became official. On February 1, 2022, a revised Isopropyl Alcohol Monograph containing the same test for Limit of Methanol as an additional Identification C Test became official. Therefore, manufacturers of products in which alcohol (ethyl alcohol) or isopropyl alcohol is used as an ingredient must test the alcohol or isopropyl alcohol ingredient using the limit test for methanol that appears in the Identification section of the USP Alcohol Monograph or USP Isopropyl Alcohol Monograph, respectively.[31] As a result, FDA may consider use of any identity test conducted for ethanol (ethyl alcohol) or isopropyl alcohol under 21 CFR 211.84 that does not contain a limit test for methanol using the USP method to be a violation under section 501(a)(2)(B) and/or 501(b) of the FD&C Act.

Additional Considerations

- Drug product manufacturers are responsible for knowing the entities in their supply chain for all the drug product ingredients, including for pharmaceutical alcohol (i.e., knowing the identities and appropriately qualifying the manufacturer of the pharmaceutical alcohol, the manufacturer(s) of any other ingredients used in their products, and any subsequent distributor(s)).[32]

- Manufacturers must establish finished drug product test methods adequate to ensure that when testing for ethanol or isopropyl alcohol content (assay), the method also distinguishes between the active ingredient and methanol.[33] CGMP requires assay testing to be conducted on all batches of finished drug products before release or distribution decision.[34]

[29] See https://www.uspnf.com/sites/default/files/usp_pdf/EN/USPNF/usp-nf-notices/fda-letter-alcohols-nitr-att.pdf.
[30] See https://www.uspnf.com/notices/methanol-testing-nitr-20200731.
[31] A drug with a name recognized in USP-NF must comply with compendial identity standards or be deemed adulterated, misbranded, or both (section 501(b) and 502(e)(3)(B) and (g) of the FD&C Act; see also 21 CFR 299.5(a) and (b)). In such cases, the identity is determined by the official tests, procedures, and acceptance criteria in the applicable USP-NF monograph. See USP-NF General Notices 2.30.
[32] See section 501 of the FD&C Act, which states, "For purposes of paragraph (a)(2)(B), the term 'current good manufacturing practice' includes the implementation of oversight and controls over the manufacture of drugs to ensure quality, including managing the risk of and establishing the safety of raw materials, materials used in the manufacturing of drugs, and finished drug products."
[33] 21 CFR 211.160(b). See also the guidance for industry *Analytical Procedures and Methods Validation for Drugs and Biologics* (July 2015).
[34] 21 CFR 211.165.

- All personnel in pharmaceutical manufacturing facilities (especially personnel directly responsible for receipt, testing, and release of pharmaceutical alcohol) should be made aware of the importance of proper testing and the potential hazards if the testing is not done.

- Repackers and others who distribute and prepare ethanol or isopropyl alcohol API for use in drug products should test pharmaceutical alcohol that is used, sold for use, or intended for use in drug products.

- Bulk or repackaged ethanol or isopropyl alcohol intended as an excipient or other component of a drug product is a drug as defined by section 201(g)(1) the FD&C Act (21 U.S.C. 321(g)(1)). Section 501(a)(2)(B) of the FD&C Act (21 U.S.C. 351(a)(2)(B)) requires that the methods used in, or the facilities or controls used for, a drug's manufacture, processing, packing, or holding conform to CGMP. Testing bulk or repackaged ethanol or isopropyl alcohol for methanol content is consistent with CGMP required under the FD&C Act.

B. Compounded Drug Products, Generally

A drug product compounded by a licensed pharmacist in a State-licensed pharmacy or Federal facility or by a licensed physician consistent with the conditions in section 503A of the FD&C Act, or in an outsourcing facility consistent with section 503B of the FD&C Act, can qualify for certain exemptions from the FD&C Act.[35] Components, both bulk drug substances and other ingredients, used in compounding must comply with the standards of the applicable USP or NF monograph, if such monograph exists, for the drug to qualify for the exemptions provided in sections 503A and 503B of the FD&C Act.[36]

In addition, drugs prepared, packed, or held under insanitary conditions are deemed to be adulterated.[37] For example, FDA observed facilities that compounded drugs using active ingredients, inactive ingredients, or processing aides that have or may have higher levels of impurities compared to compendial or pharmaceutical-grade equivalents (e.g., ingredients with potentially harmful impurities, ingredients labeled with *not for pharmaceutical use* or an equivalent statement).[38]

[35] See sections 503A(a) and 503B(a) of the FD&C Act.
[36] See sections 501(b) and 502(e)(3)(B) and (g) of the FD&C Act; see also sections 503A(b)(1)(A)(I) and (b)(1)(B) and 503B(a)(2)(B) and (a)(3) of the FD&C Act.
[37] See section 501(a)(2)(A) of the FD&C Act.
[38] See the guidance for industry *Insanitary Conditions at Compounding Facilities* (November 2020).

As discussed above, the USP monographs for alcohol (ethyl alcohol or ethanol) and isopropyl alcohol establish a limit for methanol of 200 ppm. Thus, compounded drugs containing ethanol or isopropyl alcohol with more than 200 ppm methanol may be considered adulterated under section 501(a) or (b) of the FD&C Act and would not qualify for the relevant exemptions in section 503A or section 503B of the FD&C Act because they do not comply with the standards in the applicable USP monograph. It is important to confirm the identity of ingredients used in compounding, and compounders should establish the reliability of the original manufacturer and subsequent manufacturers or suppliers of components, including any repackers, relabelers, and distributors.