

PREFACE

Refinery laboratories use hundreds of test methods to inspect the quality of the products and assist the production and process engineering groups in controlling unit operations, process design, and problem-solving. National and International agencies like the Bureau of Indian Standards, ASTM, IP, UOP, DIN, ISO, etc. cover such methods. While ASTM, BIS, IP, DIN, and ISO test methods are typically used for arbitration and business agreements. In contrast, the industry normally uses UOP test methods for in-house product quality control. However, this is not a hard rule; all these test methods can be applied for other purposes where this makes sense.

Refinery process operations have their local variations, and troubleshooting the process problems can be complex. It is not uncommon for these process problems to arise. In such situations, the chemist's expertise can be sought in identifying and locating the cause of the problem or the problem area. For instance, some cooler tubes may leak, and the product may creep into the cooling water, fouling the whole cooling water circuit. In such a situation, the chemist is consulted to test the cooling water and identify the oil in it so that the cooler, which is leaking, can be identified for rectification. No standard method will be available in such a case in any of the national or international publications. For this purpose, the chemist must recall his or her skill and experience in providing a suitable answer to the problem.

In the situation mentioned above, the chemist may have to undertake a highly laborious job of extracting the oil in sufficient quantity without destroying the properties of the oil from the cooling water scum, which may usually contain a few hundred parts per million oils only in many cases and then conduct the necessary tests to identify the oil. Sometimes, the answer may be withered away due to some unknown factors. The chemist is expected to make efforts to be true to his profession, although they become in vain, just as a doctor is expected to treat a patient, although the chances for survival may be weak.

Similar cases are common in any chemical industry, including the oil industry. For instance, several new demulsifiers are to be tested for their efficacy, the average molecular weight of naphtha used in steam reforming unit to be determined accurately, the reason for the boiling point of benzene or toluene going off, trace hydrocarbons in the nitrogen used for purging the system to be detected, individual hydrocarbons present in the feed gas to sulfur recovery plant to be determined, are but a few examples. Every chemist, at some time or other in his or her profession, must recall his or her reserves to deal with such situations where a standard test method is unavailable. Some may be simple, and some may be complicated.