

THE ROLE OF THE CENTRAL LABORATORY IN THE SYSTEM OF ANALYTICAL CONTROL, STANDARDIZATION AND QUALITY ASSURANCE

© A.Yu. Martynova¹, N. M. Zelenska²

STATE ENTERPRISE "UKRAINIAN STATE RESEARCH INSTITUTE FOR CARBOCHEMISTRY (UKHIN)", 61023, Kharkiv, 7 Vesnina St., Ukraine

O.P. Solonko³

Coke and By-Product Plant of PJSC "ArcelorMittal Kryvyi Rih", 50095, Kryvyi Rih, Krivorozhstal st., 1, Ukraine

¹ Martynova Alla Yuriivna, Ph.D. in Technical Sciences, Head of Department of Analytical Research, Standardization, Metrology and Ecology (DARSM and E), ORCID: 0009-0009-1288-7765, Scopus ID: 57203485255, e-mail: alla_martynova_aisim@ukr.net

² Natalia Mykhailivna Zelenska, Senior Scientific Researcher in DARSM and E, ORCID: 0009-0008-0327-5137, e-mail: aisim@ukhin.org.ua

³ Olena Petrivna Solonko, Head of the Central Laboratory of the Technical Department, ORCID: 0009-0005-7811-7676, e-mail Olena.Solonko@arcelormittal.com

This article examines the role of a central laboratory within an industrial enterprise in ensuring product quality at all stages of the production cycle – from the incoming inspection of raw materials to the testing of finished products. It describes the functions of the laboratory as a modern analytical center, accredited in accordance with national and international standards, as well as its involvement in the implementation and application of measurement methods and certified reference materials. Particular attention is paid to participation in interlaboratory comparison programmes, internal quality control and cooperation with the State Enterprise 'UKHIN' in the field of standardization, the development of regulatory documents and safety data sheets.

In particular, it is demonstrated that, in accordance with the requirements of the DSTU EN ISO/IEC 17025 standard (clause 7.7), the laboratory monitors the reliability of its results by participating in proficiency testing programmes and interlaboratory comparisons. State Enterprise 'UKHIN', as the coordinator, implements a specially designed programme of interlaboratory comparative measurements (ICM) of quality indicators for chemical products in accordance with DSTU EN ISO/IEC 17043. ICM programmes are structured according to various schemes and involve different methods for assessing the accuracy of measurement results: schemes involving the sequential transfer of samples from one measurement laboratory (ML) to another, which are time-consuming to implement; schemes involving the parallel transfer of the same sample to several measurement laboratories; schemes involving the radial transfer of samples, in which the coordinator sequentially transfers samples to the MLs. Proficiency testing with split samples involves comparing data obtained by small groups of participants.

It is noted that the State Enterprise 'UKHIN' employs a scheme involving the simultaneous, parallel dispatch of control samples to testing laboratories.

The importance of accreditation and compliance with international standards in ensuring the reliability of measurement results and enhancing the competitiveness of the enterprise's products is also highlighted.

Keywords: analytical control, central laboratory, quality, research, certified reference materials, measurement methods, national standardization, safety data sheet.

Corresponding author: N.M. Zelenska, e-mail: aisim@ukhin.org.ua

Manuscript received 2026-04-10

Accepted for publication 2026-07-01

Published 2026-07-22

How to Cite:

1. Martynova A.Yu. Rol tsentralnoi laboratorii u systemi analitychnoho kontroliu, standartyzatsii ta zabezpechennia yakosti produktsii / A.Yu. Martynova, N.M. Zelenska, O.P. Solonko // Vuhlekhimichniy zhurnal. – 2026. – № 4. – S. 48-56. <https://doi.org/10.31081/1681-309X-2026-0-4-48-56>

2. Martynova, A.Yu., Zelenska, N.M. & Solonko, O.P. (2026). Rol tsentralnoi laboratorii u systemi analitychnoho kontroliu, standartyzatsii ta zabezpechennia yakosti produktsii. *Vuhlekhimichniy Zhurnal*, (4), 48–56. <https://doi.org/10.31081/1681-309X-2026-0-3-48-56>

How to obtain the full text of the article:

- within 2 years from the date of publication – upon request by e-mail: post@ukhin.org.ua
- after 2 years from the date of publication – free access in the database “Scientific Periodicals of Ukraine” of the Vernadsky National Library of Ukraine by the link:

http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?Z21ID=&I21DBN=UJRN&P21DBN=UJRN&S21STN=1&S21REF=10&S21FMT=juu_all&C21COM=S&S21CNR=20&S21P01=0&S21P02=0&S21P03=0&S21COLORTERMS=0&S21STR=ukhi

This article is licensed under a Creative Commons Attribution 4.0 International License
<https://creativecommons.org/licenses/by/4.0/>

References

1. Zakon Ukrainy «Pro akredytatsiiu orhaniv z otsinky vidpovidnosti», vid 17 travnia 2001 roku № 2407-III / Baza danykh «Zakonodavstvo Ukrainy» / VR Ukrainy / Elektronnyi resurs. – Rezhym dostupu: <https://zakon.rada.gov.ua/laws/show/2407-14#Text>
2. Podatkovyi Kodeks Ukrainy, vid 2 hrudnia 2010 roku № 2755-VI, iz zminamy i dopovnenniamy / Baza danykh «Zakonodavstvo Ukrainy» / VR Ukrainy / Elektronnyi resurs. – Rezhym dostupu: <http://zakon.rada.gov.ua/laws/show/2755-17>
3. Zakon Ukrainy «Pro derzhavne rehuliuвання виробництва i obihu spyrtu etylovoho, spyrtovykh dystyliativ, bioetanolu, alkoholnykh napoiv, tiutiunovykh vyrobiv, tiutiunovoi syrovyny, ridyn, shcho vykorystovuiutsia v elektronnykh syharetakh, ta palnoho», vid 18 chervnia 2024 roku № 3817-IX / Baza danykh «Zakonodavstvo Ukrainy» / VR Ukrainy / Elektronnyi resurs. – Rezhym dostupu: <https://zakon.rada.gov.ua/laws/show/3817-20#Text>
4. ISO 501:2025 Hard coal — Determination of the crucible swelling number. International Organization for Standardization: Geneva, Switzerland; 2025.
5. ISO 728:2021 Coke — Size analysis by sieving. International Organization for Standardization: Geneva, Switzerland; 2021.
6. ISO 1171:2024 Coal and coke — Determination of ash. International Organization for Standardization: Geneva, Switzerland; 2025.
7. DSTU EN ISO/IEC 17043:2017 (EN ISO/IEC 17043:2010; ISO/IEC 17043:2010, IDT). – Kyiv: DP «UkrNDNTs», 2017. – 39 s.
8. DSTU EN ISO/IEC 17025:2019 (EN ISO/IEC 17025:2017, IDT; ISO/IEC 17025:2017, IDT) Zahalni vymohy do kompetentnosti vyprobuvalnykh ta kalibruvalnykh laboratorii. – Kyiv: DP «UkrNDNTs», 2019. – 30 s.
9. Zakon Ukrainy «Pro standartyzatsiiu», vid 05 chervnia 2014 roku № 1315-VII / Baza danykh «Zakonodavstvo Ukrainy» / VR Ukrainy / Elektronnyi resurs. – Rezhym dostupu: <http://zakon2.rada.gov.ua/laws/show/1315-18>
10. DSTU 1.2:2024 Natsionalna standartyzatsiia. Pravyla provedennia robit z natsionalnoi standartyzatsii. – Kyiv: DP «UkrNDNTs», 2024. – 40 s.
11. DSTU 1.5:2015 Natsionalna standartyzatsiia. Pravyla rozroblennia, vykladannia ta oformlennia natsionalnykh normatyvnykh dokumentiv. – Kyiv: DP «UkrNDNTs», 2015. – 65 s.
12. SOU KZPS 74.9-02568182-003:2016 Tekhnichni umovy Ukrainy. Nastanovy shchodo typovoi pobudovy, vykladennia, oformlennia, poznachennia, pryiniattia ta nadannia chynnosti – Chynnyi vid 2016-01-13 – Kyiv: DP «Ukrmetrteststandart», 2016 – 47 s.
13. Tekhnichni rehlement shchodo bezpechnosti khimichnoi produktsii, Postanova KMU vid 23 lypnia 2024 roku № 847 / Baza danykh «Zakonodavstvo Ukrainy» / VR Ukrainy / Elektronnyi resurs. – Rezhym dostupu: <https://zakon.rada.gov.ua/laws/show/847-2024-%D0%BF#Text>