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The six departments jointly issued guidance on promoting the high-quality development of the petrochemical industry in the 14th Five-Year Plan

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The petrochemical industry is a pillar industry of the national economy, with a large economic aggregate, a long industrial chain, a wide range of products, and wide correlation coverage, which is related to the safety and stability of the industrial chain and supply chain, green and low-carbon development, and the improvement of people's livelihood. In order to implement the Outline of the 2035th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Long-Range Goals for <>, implement the <>th Five-Year Plan for the Development of the Raw Material

Is Industry, and promote the high-quality development of the petrochemical industry, these Opinions are formulated.

1. General requirements

(1) Guiding ideology

Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, fully implement the spirit of the 19th National Congress of the Communist Party of China and the 19th Plenary Session, base on the new development stage, complete, accurate and comprehensive implementation of the new development concept, build a new development pattern, take promoting high-quality development as the theme, deepen supply-side structural reform as the main line, meet the needs of the people for a better life as the fundamental purpose, take reform and innovation as the fundamental driving force, coordinate development and security, accelerate the transformation and upgrading of traditional industries, and vigorously develop new chemical materials and fine chemicals. Accelerate the digital transformation of the industry, improve the level of intrinsic safety and clean production, accelerate the quality, efficiency and power transformation of the petrochemical industry, and promote China's progress from a petrochemical country to a strong country.

(2) Basic principles

Adhere to market leadership. Give full play to the decisive role of the market in the allocation of resources, give better play to the role of the government, strengthen the guidance and standardization of planning policy standards, and maintain the order of fair competition.

Adhere to innovation-driven. Focus on self-reliance and self-improvement in science and technology, promote key core technology research, promote the safety and stability of the industrial chain and supply chain, improve total factor productivity, and improve development quality and efficiency.

Adhere to green safety. Establish bottom-line thinking, strengthen social responsibility care, improve the level of intrinsic safety, promote green cycle and low-carbon development, and strengthen industry governance systems and governance capacity building.

Adhere to open cooperation. Create a market-oriented, rule-of-law, and international business environment, adhere to high-quality introduction and high-level going out, promote the efficient global allocation of factor resources, and strengthen the upstream and downstream coordination of the industrial chain and the coupling development between relevant industries.

(3) Main objectives

By 2025, the petrochemical industry will basically form a high-quality development pattern with strong independent innovation ability, reasonable structural layout, green, safe and low-carbon, high-end product guarantee capacity will be greatly improved, core competitiveness will be significantly enhanced, and high-level self-reliance and self-improvement will take solid steps.

——Innovation and development. The original innovation and integrated innovation capabilities will continue to increase, and by 2025, the proportion of R&D investment in the main business income of enterprises above the regulations will reach more than 1.5%; Break through more than 20 key common technologies and more than 40 key new products.

- Industrial structure. The concentration of bulk chemical products production has been further improved, and the capacity utilization rate has reached more than 80%; The guarantee level of ethylene equivalent has been greatly improved, and the guarantee level of new chemical materials has reached more than 75%.

- Industrial layout. The task of relocation and transformation of hazardous chemical production enterprises in densely populated urban areas has been fully completed, forming about 70 chemical parks with competitive advantages. By 2025, the output value of chemical parks will account for more than 70% of the total output value of the industry.

- Digital transformation. The self-control rate of major production equipment of enterprises in key fields such as petrochemical and coal chemical industry has reached more than 95%, and about 30 intelligent manufacturing demonstration factories and 50 intelligent chemical demonstration parks have been built.

- Green and safe. The energy consumption and carbon emissions per unit of bulk products have decreased significantly, the total volatile organic compound emissions have been reduced by more than 10% compared with the "13th Five-Year Plan", the intrinsic safety level has been significantly improved, and the safety accidents of heavy and extraordinarily large production have been effectively curbed.

二、提升创新发展水平

(一) 完善创新机制，形成“三位一体”协同创新体系。强化企业创新主体地位，加快构建重点实验室、重点领域创新中心、共性技术研发机构“三位一体”创新体系，推动产学研用深度融合。优化整合行业相关研发平台，创建高端聚烯烃、高性能工程塑料、高性能膜材料、生物医用材料、二氧化碳捕集利用等领域创新中心，强化国家新材料生产应用示范、测试评价、检验检测等平台作用，推进催化材料、过程强化、高分子材料结构表征及加工应用技术与装备等共性技术创新。支持企业牵头组建产业技术创新联盟、上下游合作机制等协同创新组织，支持地方合理布局建设区域创新中心、中试基地等。

(二) 攻克核心技术，增强创新发展动力。加快突破新型催化、绿色合成、功能-结构一体化高分子材料制造、“绿氢”规模化应用等关键技术，布局基础化学品短流程制备、智能仿生材料、新型储能材料等前沿技术，巩固提升微反应连续流、反应-分离耦合、高效提纯浓缩、等离子体、超重力场等过程强化技术。聚焦重大项目需求，突破特殊结构反应器、大功率电加热器、大型专用机泵、阀门、控制系统等重要装备及零部件制造技术，着力开发推广工艺参数在线检测、物性结构在线快速识别判定等感知技术以及过程控制软件、全流程智能控制系统、故障诊断与预测性维护等控制技术。

(三) 实施“三品”行动，提升化工产品供给质量。围绕新一代信息技术、生物技术、新能源、高端装备等战略性新兴产业，增加有机氟硅、聚氨酯、聚酰胺等材料品种规格，加快发展高端聚烯烃、电子化学品、工业特种气体、高性能橡塑材料、高性能纤维、生物基材料、专

用润滑油脂等产品。积极布局形状记忆高分子材料、金属-有机框架材料、金属元素高效分离介质、反应-分离一体化膜装置等新产品开发。提高化肥、轮胎、涂料、染料、胶粘剂等行业绿色产品占比。鼓励企业提升品质，培育创建品牌。

三、推动产业结构调整

（四）强化分类施策，科学调控产业规模。有序推进炼化项目“降油增化”，延长石油化工产业链。增强高端聚合物、专用化学品等产品供给能力。严控炼油、磷铵、电石、黄磷等行业新增产能，禁止新建汞的（聚）氯乙烯产能，加快低效落后产能退出。促进煤化工产业高端化、多元化、低碳化发展，按照生态优先、以水定产、总量控制、集聚发展的要求，稳妥有序发展现代煤化工。

（五）加快改造提升，提高行业竞争能力。动态更新石化化工行业鼓励推广应用的技术和产品目录，鼓励利用先进适用技术实施安全、节能、减排、低碳等改造，推进智能制造。引导烯烃原料轻质化、优化芳烃原料结构，提高碳五、碳九等副产资源利用水平。加快煤制化学品向化工新材料延伸，煤制油气向特种燃料、高端化学品等高附加值产品发展，煤制乙二醇着重提升质量控制水平。

四、优化调整产业布局

（六）统筹项目布局，促进区域协调发展。依据国土空间规划、生态环境分区管控和国家重大战略安排，统筹重大项目布局，推进新建石化化工项目向原料及清洁能源匹配度好、环境容量富裕、节能环保低碳的化工园区集中。推动现代煤化工产业示范区转型升级，稳妥推进煤制油气战略基地建设，构建原料高效利用、资源要素集成、减污降碳协同、技术先进成熟、产品系列高端的产业示范基地。持续推进城镇人口密集区危险化学品生产企业搬迁改造。落实推动长江经济带发展、黄河流域生态保护和高质量发展要求，推进长江、黄河流域石化化工项目科学布局、有序转移。

（七）引导化工项目进区入园，促进高水平集聚发展。推动化工园区规范化发展，依法依规利用综合标准倒逼园区防范化解安全环境风险，加快园区污染防治等基础设施建设，加强园区污水管网排查整治，提升本质安全和清洁生产水平。引导园区内企业循环生产、产业耦合发展，鼓励化工园区间错位、差异化发展，与冶金、建材、纺织、电子等行业协同布局。鼓励化工园区建设科技创新及科研成果孵化平台、智能化管理系统。严格执行危险化学品“禁限控”

目录，新建危险化学品生产项目必须进入一般或较低安全风险的化工园区（与其他行业生产装置配套建设的项目除外），引导其他石化化工项目在化工园区发展。

五、推进产业数字化转型

（八）加快新技术新模式协同创新应用，打造特色平台。加快5G、大数据、人工智能等新一代信息技术与石化化工行业融合，不断增强化工过程数据获取能力，丰富企业生产管理、工艺控制、产品流向等方面数据，畅联生产运行信息数据“孤岛”，构建生产经营、市场和供应链等分析模型，强化全过程一体化管控，推进数字孪生创新应用，加快数字化转型。打造3-5家面向行业的特色专业型工业互联网平台，引导中小化工企业借助平台加快工艺设备、安全环保等数字化改造。围绕化肥、轮胎等关乎民生安全的大宗产品建设基于工业互联网的产业链监测、精益化服务系统。

（九）推进示范引领，强化工业互联网赋能。发布石化化工行业智能制造标准体系建设指南，编制智能工厂、智慧园区等标准。针对行业特点，建设并遴选一批数字化车间、智能工厂、智慧园区标杆。组建石化、化工行业智能制造产业联盟，培育具有国际竞争力的智能制造系统解决方案供应商，提升化工工艺数字化模拟仿真、大型机组远程诊断运维等服务能力。基于智能制造，推广多品种、小批量的化工产品柔性生产模式，更好适应定制化差异化需求。实施石化行业工业互联网企业网络安全分类分级管理，推动商用密码应用，提升安全防护水平。

六、加快绿色低碳发展

（十）发挥碳固定碳消纳优势，协同推进产业链碳减排。有序推动石化化工行业重点领域节能降碳，提高行业能效水平。拟制高碳产品目录，稳妥调控部分高碳产品出口。提升中低品位热能利用水平，推动用能设施电气化改造，合理引导燃料“以气代煤”，适度增加富氢原料比重。鼓励石化化工企业因地制宜、合理有序开发利用“绿氢”，推进炼化、煤化工与“绿电”、“绿氢”等产业耦合示范，利用炼化、煤化工装置所排二氧化碳纯度高、捕集成本低等特点，开展二氧化碳规模化捕集、封存、驱油和制化学品等示范。加快原油直接裂解制乙烯、合成气一步法制烯烃、智能连续化微反应制备化工产品等节能降碳技术开发应用。

（十一）着力发展清洁生产绿色制造，培育壮大生物化工。滚动开展绿色工艺、绿色产品、绿色工厂、绿色供应链和绿色园区认定，构建全生命周期绿色制造体系。鼓励企业采用清洁生产技术装备改造提升，从源头促进工业废物“减量化”。推进全过程挥发性有机物污染治

理，加大含盐、高氨氮等废水治理力度，推进氨碱法生产纯碱废渣、废液的环保整治，提升废催化剂、废酸、废盐等危险废物利用处置能力，推进（聚）氯乙烯生产无汞化。积极发展生物化工，鼓励基于生物资源，发展生物质利用、生物炼制所需酶种，推广新型生物菌种；强化生物基大宗化学品与现有化工材料产业链衔接，开发生态环境友好的生物基材料，实现对传统石油基产品的部分替代。加强有毒有害化学物质绿色替代品研发应用，防控新污染物环境风险。

（十二）促进行业间耦合发展，提高资源循环利用效率。推动石化化工与建材、冶金、节能环保等行业耦合发展，提高磷石膏、钛石膏、氟石膏、脱硫石膏等工业副产石膏、电石渣、碱渣、粉煤灰等固废综合利用水平。鼓励企业加强磷钾伴生资源、工业废盐、矿山尾矿以及黄磷尾气、电石炉气、炼厂平衡尾气等资源化利用和无害化处置。有序发展和科学推广生物可降解塑料，推动废塑料、废弃橡胶等废旧化工材料再生和循环利用。

七、夯实安全发展基础

（十三）推广先进技术管理，提升本质安全水平。压实安全生产主体责任，推进实施责任关怀，支持企业、园区提高精细化运行管理水平，建立健全健康安全环境（HSE）管理体系、安全风险分级管控和隐患排查治理双重预防机制，建立完善灭火救援力量，提升应急处置能力。持续在危险化学品企业开展“工业互联网+安全生产”建设，推动《全球化学品统一分类和标签制度》（GHS）实施。鼓励企业采用微反应、气体泄漏在线微量快速检测等先进适用技术，消除危险源或降低危险源等级，推进高危工艺安全化改造和替代。

（十四）增强原料资源保障，维护产业链供应链安全稳定。拓展石化原料供给渠道，构建国内基础稳固、国际多元稳定的供给体系，适度增加轻质低碳富氢原料进口。按照市场化原则，推进国际钾盐等资源开发合作。加强国内钾资源勘探，积极推进中低品位磷矿高效采选技术、非水溶性钾资源高效利用技术开发。多措并举推进磷石膏减量化、资源化、无害化，稳妥推进磷化工“以渣定产”。加强化肥生产要素保障，提高生产集中度和骨干企业产能利用率，确保化肥稳定供应。保护性开采萤石资源，鼓励开发利用伴生氟资源。

八、加强组织保障

（十五）强化组织实施。各地有关部门要结合本地实际，将重点任务统筹纳入部门重点工作，强化事中事后监管，协调推进任务落实。有关企业要结合自身实际，按照主要目标和重点任务，务实推进相关工作，依法披露环境信息。相关行业组织要发挥桥梁纽带作用，积极服务

指导，强化行业自律。加强政策宣贯解读，积极回应社会舆论和民众合理关切，切实提升社会公众对石化化工的科学理性认知。

（十六）完善配套政策。加强财政、金融、区域、投资、进出口、能源、生态环境、价格等政策与产业政策的协同。发挥国家产融合作平台作用，推进银企对接和产融合作。强化知识产权保护。加强化工专业人才培养和从业员工培训。推动首台（套）装备、首批次材料示范应用。

（十七）健全标准体系。建立完善化工新材料特别是改性专用料、精细化学品尤其是专用化学品等标准体系，生物基材料、生物可降解塑料、再生塑料材料评价标识管理体系，绿色用能监测与评价体系。完善重点产品能耗限额、有毒有害化学物质含量限值和污染物排放限额。探索基于碳足迹制修订含碳化工产品碳排放核算以及低碳产品评价等标准。参与全球标准规则制定，加强国际标准评估转化。

工业和信息化部
国家发展和改革委员会
科学技术部
生态环境部
应急管理部
国家能源局

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