

Year	Big Trend of Era	Chemistry-related Developments of Japan	Chemistry-related Developments of the World	Society in General
1953	Introduction of policy to promote international competitiveness, rationalize ammonia and foster organic chemistry	Tokyo Shibaura Electric (now Toshiba) and Shin-Etsu Chemical started full-scale production of silicone by direct process.	(W. Germany) Karl Ziegler succeeded in synthesizing polyethylene in low pressure, under 10 atmospheric pressures.	
1954		Daikin Industries succeeded in domestic production of fluoro (Polytrifluoromonochloroethylene) resins. It developed tetrafluoroethylene in 1955.	(Italy) Giulio Natta succeeded in propylene polymerization with titanium trichloride as the catalyst. This led to the production of polypropylene.	
1956		Government determined "Outline of Fostering Petrochemical Industry".	(USA) Standard Oil Ohio developed production process for acrylonitrile (i.e. Sohio process).	Second Arab-Israeli conflict (Suez Crisis)
1957		Japan Exlan started to produce polyacrylonitrile fibers. Kanegafuchi Kagaku-Kogyo (now Kaneka) and others also started to produce the fibers.	Formosa Plastics was established.	
1958	Introduction of full-scale petrochemical industry	Toyo Rayon (now Toray) and Teikoku Rayon (now Teijin) introduced technology from IC of UK to manufacture polyethylene fibers and film.	(USA) Hercules Powder, (Italy) Montecatini, and (W. Germany) Hoechst started to produce isotactic polypropylene independently.	
		Maruzen Oil (now Cosmo Oil) produced SBA and MEK from exhausted gas of oil refinery. Japan's first petrochemical product.	(Italy) ANIC produced emulsion polymerization SBR.	
		Japan Synthetic Rubber (now JSR) was established.	(W. Germany) Bayer commercialized polycarbonate.	Tokyo Tower was completed.
1959	Mitsui Petrochemical Industries (now Mitsui Chemicals) Iwakuni and Sumitomo Chemical Niihama started operation. Petrochemical products including polyethylene were produced domestically. Petrochemical era opened.		Economic boom (1958-61)	
1960	Japan Petrochemical Industry Association was established with Kamesaburo Ikeda as first chairman.			
1961	Start of petrochemical industry : Although starting behind Europe and the US, it grew rapidly. With domestic production and the strengthening of international competitiveness as a goal, many industrial capitalists entered to compete.			
1962	Nippon Oil (now JX Nippon Oil & Energy) Kawasaki and Mitsubishi Petrochemical (now Mitsubishi Chemical) Yokkaichi petrochemical complexes started operation. (Completed the first stage of domestic petrochemical production.)	(USA) DuPont started to produce polyacetal "Delrin".		
1963	Nippon Shokubai Kagaku Kogyo (now Nippon Shokubai) commercialized ethylene oxide with its own technology for the first time in Japan.			
1964	Zeon domestically produced NBR, HSR, and SBR latex special synthetic rubber with the technology of Goodrich.			
1965	Teijin produced polycarbonate domestically.			
1966	Japan Synthetic Rubber (now JSR) started to produce general-purpose synthetic rubber SBR with the technology of Goodyear.	(Netherlands) Shell manufactured SBR by solution polymerization with lithium catalyst.	Campaign against the Japan-US Security Treaty.	
1967	Shin-Etsu Chemical started to produce high-purity silicon.	(USA) DuPont launched aromatic polyamide "Aramid".	Organization of Petroleum Export Countries (OPEC) was established.	
1968	Asahi-Dow (now Asahi Kasei) launched food wrapping film made of polyvinylidene chloride (PVDC).		Liberal Democratic Party announced its policy for rapid economic growth/income doubling.	
1969	Toyo Koatsu Industries (now Mitsui Chemicals) and Dainippon Celluloid (now Daicel) started to produce styrene acrylonitrile copolymer (SAN) independently in Japan with their technology.		USSR succeeded in launching a manned spaceship for the first time.	
1970	Denki Kagaku Kogyo started to produce chloroprene rubber with its own technology, using the carbide acetylene process.		Successful first flight of domestic airplane "YS-11."	
1971	Mitsui Chemical Industry (now Mitsui Chemicals) domestically produced polypropylene.		Cuban Missile Crisis.	
1972	Toagosei Chemical Industry (now Toagosei) launched instant glue "Aron Alpha."		Successful TV broadcast between Japan and the US by communications satellite.	
1973	Hamano Resin (now JSR) and Nitto Chemical Industry (now Mitsubishi Rayon) and others started to produce ABS resins.			
1974	Kurashiki Rayon (now Kuraray) started to produce artificial leather "Clarino."		Tokyo Olympic Games were held.	
1975	Zeon commercialized butadiene extrusion process with DMF as solvent (GPB process).	(USA) GE developed polyphenyleneoxide (PPO) and commercialized it in 1967 as modified PPE.	Vietnam War (through 1975)	
1976	Toyo Soda Manufacturing (now Tosoh) started to produce vinyl chloride monomers by oxychlorination process for the first time in Japan.		Economic boom (through 1970)	
1977	Petrochemical Cooperation Round-Table Conference determined standards for newly-established facilities for ethylene producing over 300,000 tons per year.	(India) Reliance was established to develop into textile industry.	Cultural Revolution in China (through 1977)	
1978	Toyo Koatsu Industries and Mitsui Chemical Industry merged and Mitsui Toatsu Chemicals was formed.		Environmental Pollution Prevention Law was promulgated.	
1979	Toyo Ohka Kogyo started to manufacture photo resists for semiconductors.	(USA) George H. Heilmeyer and others of RCA produced a display device using nematic liquid crystal. Movement to desk-top calculators, word processors and other technologies.	Ministry of Health and Welfare acknowledged mercury pollution incidents in Minamata and Agano River as pollution diseases.	
1980	Oji-Yuka Synthetic Paper (now Yupo Corp.) developed polyolefin synthetic paper.	(W. Germany) Hoechst developed polyethylene terephthalate (PET) resins.	Osaka Expo was held.	
1981	Nippon Shokubai Kagaku Kogyo (now Nippon Shokubai) commercialized acrylic acid with its own propylene oxidation technology for the first time in Japan.		14 pollution-related bills were enacted into law at an extraordinary Diet session.	
1982	Sakuiji Ikeda and Hideki Shirakawa succeeded in synthesizing a polyacetylene film membrane by acetylene polymerization. Applied for the development of lithium-ion rechargeable battery and others.		Environment Agency was formed.	
1983	Zeon started to produce polyisoprene by extraction process.		Nixon Shock: Yen moved to provisional floating exchange rate system.	
1984	Toray started to produce polyacrylonitrile carbon fiber "Torayca."			
1985	Japan Gas Chemical and Mitsubishi Edogawa Chemical merged to form Mitsubishi Gas Chemical.			
1986	Sanyo Ethylene started operation in the Mizushima Petrochemical Complex. 15 petrochemical complexes were all present.		Restoration of diplomatic ties between Japan and China.	
1987	Kuraray started to produce vinylalcohol ethylene copolymer resins "Eval".	Club of Rome announced a "limitation of growth" with the drying up of natural resources, including petroleum.	Fourth Arab-Israeli conflict outbreak. First Oil Crisis occurred with resulting confusion of shortage of commodities such as detergents.	
1988	Law Concerning the Examination and Regulation of Manufacturing of Chemical Substances was proposed. The world's first law regulating chemical substances.		Issue of mercury-polluted fish and nationwide protest by fishermen.	
1989	Ministry of International Trade and Industry (now Ministry of Economy, Trade and Industry) was directed to make overall inspections of the 3,253 plants nationwide due to many occurrences of accidents at chemical factories.			
1990	Government determined the conversion of the production process of caustic soda using mercury. Conversion of soda manufacturing process.			
1991	Asahi Chemical Industry (now Asahi Kasei) started to manufacture hollow-fiber artificial kidneys.	(USA) Stanley N. Cohen and Herbert W. Boyer developed recombinant DNA technologies. Introduction of biotechnology.	Bombing incident of Mitsubishi Heavy Industry Bldg. occurred.	
1992	Asahi Chemical Industry (now Asahi Kasei) started commercial production of caustic soda by ion-exchange membrane process electrolysis.		The first Summit Conference of the Leading Industrialized Nations was held. (Rambouillet Summit)	
1993	Petrochemical Corporation of Singapore (PCS) was established.	Saudi Basic Industries Corporation (SABIC) was established.		
1994	Sanyo Chemical Industries commercialized superabsorbent resins (SAP) for the first time in the world.		New Tokyo International Airport (Narita) was opened.	
1995	The first East Asia Petrochemical Industry Conference was held.		Second Oil Crisis occurred.	
1996	The Saudi Methanol (AR-RAZI) was established.		Oil Crisis : The price of crude oil soared during the first crisis due to the fourth Arab-Israeli conflict. The second crisis was due to the Iranian Revolution	
1997	Kyodo Sakusan started to produce methanol-process acetic acid for the first time in Japan.			
1998	Prof. Kenichi Fukui of Kyoto University was awarded the Nobel Prize in Chemistry. Japan's first awarding of the Nobel Prize in Chemistry.		Honda America started to manufacture passenger cars.	
1999	Joint sales company (by four companies) was established in vinyl chloride resins industry.			
2000	Ministry of International Trade and Industry (now Ministry of Economy, Trade and Industry) decided to virtually liberalize importation of naphtha for petrochemical industry.			
2001	Industrial Structure Council submitted a report on how the petrochemical industry should operate.			
2002	Nippon Unicar started to produce the US UCC-process straight-chain low density polyethylene.	China Petroleum and Chemical Corp. (SINOPEC) was established.	Special Law for the Structural Improvement of Specified Industries was proposed and enforced.	
2003	Mitsubishi Rayon commercialized isobutylene direct oxidation process MMA monomers for the first time in the world.	(India) A subsidiary company of the US UCC had an accident regarding the leaking of poisonous gas in Bhopal, India. Issue of risk communications was raised.		
2004	Joint sales companies (four companies) were established in polyolefin industry.			
2005	Ube Ammonia Industry completed a coal gasification process large-scale ammonia facility.	(Canada) Canadian Chemical Producers' Association advocated Responsible Care.	Conferece of Ministers and Governors of the Group of Five Countries agreed to depreciate high dollars (i.e. Plaza Agreement)	
2006	Kanegafuchi Kagaku-Kogyo (now Kaneka) developed and commercialized amorphous silicon solar cells.		Bubble economy started (through 1991)	
2007	The completion of the conversion of production process of caustic soda and of the non-mercury process.			
2008	Dainippon Ink and Chemicals (now DIC) acquired the graphic arts materials division of the US Sun Chemical. Global development of the Japanese chemical companies occurs in full scale.			
2009	Bridgestone acquired Firestone of the US.			
2010	Zeon and Japan Synthetic Rubber (now JSR) expanded the use of cyclic olefins transparent resins to materials for electronic information devices.	Conference of Environment Ministers on Global Warming Countermeasures was held and it was agreed to maintain the emission level of carbon dioxide at a certain level until 2000.	Wall in Berlin was destroyed and the Cold War ended.	
2011	Asahi Chemical Industry (now Asahi Kasei) developed practical lithium-ion rechargeable battery.	International Council of Chemical Industry Associations (ICCA) was founded.	East and West Germanies were united.	
2012	Four chemical organizations held the first events of the "Dream Chemistry 21."	Meeting of the Parties to the Montreal Protocol resolved the total abolishment of ozone-destroying substances (special freon and others).		
2013	Nichia Corp. succeeded in developing blue-light emitting diode for the first time in the world.	Club of Rome organized "Business Council for Sustainable Development (BCSD)". Developed to an international standardization of environmental management.	United Soviet Socialist Republic ceased to exist and the Commonwealth of Independent States was formed.	
2014	Mitsubishi Kasei and Mitsubishi Petrochemical merged to form Mitsubishi Chemical.	The United Nations Conference on Environment and Development "Earth Summit" was held.	Basic Environment Act was proposed and enforced.	
2015	Industry reorganization : De-industrialization due to high yen and globalization, caused by the closing of cold-war structure, prompted the chemical industry to consolidate. Business consolidation and M&A progressed.	(Netherlands) Akzo and (Sweden) Nobel merged to form AkzoNobel.	Product Liability Act (PL Act) was proposed.	
2016	Japan Responsible Care Council was established.			
2017	Mitsui Petrochemical Industries and Mitsui Toatsu Chemicals merged to form Mitsui Chemicals.	The First Conference of the Parties to the UN Framework Conference on Climate Change (COP) was held.	The World Trade Organization (WTO) was established.	
2018	Pollutant Release and Transfer Register Law (PRTR Law) was proposed.	<i>Our Stolen Future</i> , authored by Theo Colborn and others, was published. She mentioned about the dangers of chemicals as endocrine disrupters.	The Asian Financial Crisis occurred.	
2019	All of the production processes of caustic soda were converted to the ion-exchange membrane process.	(Germany) Hoechst and (France) Rhone-Poulenc merged and Aventis was formed. The chemical section of Hoechst was acquired by Celanese.		
2020	Japan Chemical Industry Association (JCIA) started its Long-range Research Initiative (LRI) regarding the effects of chemicals on human health and the environment. JCIA coordinates with the chemical industry associations of Europe and the US (CEFCI, ACC) and ICCA.	(USA) Exxon and Mobil merged to form ExxonMobil.		
2021	Hideki Shirakawa was awarded Nobel Prize in Chemistry for conductive polymer.	(Netherlands) Shell and polyolefin companies (Elenac, Montell, and Targor) of Basell were merged and Basell was formed.		
2022	Ryoji Noyori was awarded the Nobel Prize in Chemistry for asymmetric synthesis of organic compound. It is widely applied in the pharmaceutical and food industries.	(France) Total Fina acquired Elf Aquitaine and Total Fina Elf was formed. (Complete in 2003.)	China joined in the WTO.	
2023	Koichi Tanaka was awarded Nobel Prize in Chemistry for biopolymers. He developed a device to measure the mass of protein.			
2024	Roche of Switzerland acquired Chugai Pharmaceutical.	(USA) Cargill Dow Polymers started to operate its big-scale facility of polylactide-based biodegradable plastics "Nature Works."		
2025	Sumitomo Chemical jointly established Petro Rabigh with Saudi Aramco.	(Saudi Arabia) SABIC acquired the petrochemical business of DSM of The Netherlands and advanced into the European market.		
2026	Mitsubishi Chemical Holdings was formed with Mitsubishi Chemical and Mitsubishi Pharma (now Tanabe Mitsubishi Pharma) under its umbrella. In 2007, Mitsubishi Plastics and, in 2010, Mitsubishi Rayon were integrated under its umbrella.	World Summit on Sustainable Development was held. It was agreed to develop the Strategic Approach for International Chemical Management (SAICM).		
2027	Yamanouchi Pharmaceutical and Fujisawa Pharmaceutical merged and Astellas Pharma was established.	SAICM : "It aims at minimizing the adverse effects on health and the environment by the manufacturing and use of chemicals by 2020." In Japan, through GPS/JIPS, the chemical industry with adequate management is handling risk assessment and information disclosure of many chemicals in the supply chain in general.	Kyoto Protocol, concerning prevention of global warming, became effective.	
2028	Daichi-Sankyo, a joint holding company of Sankyo and Daiichi Pharmaceutical, was established and the two companies merged in 2007.			
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