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John P. Cahill
Commissioner

FINAL STATEMENT OF BASIS
SELECTION OF CORRECTIVE MEASURES TO ADDRESS
HUDSON RIVER PONDED BACKWATER AREA
CONTAMINATED SOIL/BOTTOM SEDIMENTS
at the
Ciba Specialty Chemicals Corporation and Hercules Incorporated
MAIN PLANT SITE
Lower Warren Street
Glens Falls, Warren County
New York

November 29, 2000

The New York State Department of Environmental Conservation (Department) has selected the Final Corrective Measures to address the presence of contaminated soil/bottom sediments in the Ponded Backwater Area (PBA), which is located immediately downstream of the site and adjacent to the Hudson River. The proposed final corrective measures were developed through the use of a focused Corrective Measures Study which presents a pragmatic, conceptual, corrective measures plan that includes: removal of the contaminated soil/bottom sediments by mechanical means; disposal at the Main Plant Site under a permeable cover; provisions to be implemented (as necessary) to contain the material during excavation and transportation; and backfilling and restoring the excavated areas. A public comment period was held from August 30, 2000 to October 16, 2000 on the draft Statement of Basis and the draft permit modification.

Comments were received from Brown and Caldwell (the facility's consultant). In response to these comments, revisions were made to the draft Statement of Basis.

Ciba Specialty Chemicals Corporation and Hercules Incorporated shall implement the Final Corrective Measures pursuant to the modification made to the Article 27, Title 9; 6NYCRR Part 373: Hazardous Waste Management Permit.

Dated: Nov 29, 2000

By: Stephen Hammond
Stephen Hammond, P.E.
Director
Division of Solid & Hazardous Materials

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FINAL STATEMENT OF BASIS

CIBA SPECIALTY CHEMICALS AND HERCULES INCORPORATED
HUDSON RIVER PONDED BACKWATER AREA
GLENS FALLS, NEW YORK 12801
EPA I.D. NO: NYD002069748

November 29, 2000

Announcement of Proposed Corrective Measures

This Statement of Basis (SB) has been developed by the New York State Department of Environmental Conservation (NYSDEC) under the authority of the Solid Waste Disposal Act, as amended, and more commonly referred to as the Resource Conservation and Recovery Act, or RCRA. The SB addresses the final proposed RCRA corrective measures for the Ponded Backwater Area (PBA). The PBA, impacted by past releases of hazardous constituents from the Ciba/Hercules Main Plant Site, is located immediately downstream from this site on the north side of the upper Hudson River. The SB presents a summary of pertinent information and data associated with the PBA, including:

- Background and regulatory history;
- Description of the area;
- Contamination found in the area;
- Potential environmental and human health risks posed by the soil/sediment contamination; and
- The proposed corrective measures removal action and restoration program.

The proposed final corrective measure was developed through the use of a focused Corrective Measure Study (CMS). The focused CMS presents a pragmatic, conceptual corrective measures plan, acceptable to the Department which includes:

- Removal of the contaminated soil/bottom sediments by mechanical means (i.e., excavation by earth-moving equipment);
- Disposal at the Main Plant Site under the permeable cover;
- Provisions to be implemented, as necessary, to contain the material during transportation, to prevent the release of particulates into the air and to prevent the release of material into the water column with subsequent deposition; and
- Backfilling and restoring the excavated areas.

The NYSDEC welcomes public comments pertinent to finalizing the selected corrective measures. Public comments can influence NYSDEC's final selection of corrective measures. If new substantive information and arguments are presented to NYSDEC through public comments,

NYSDEC may integrate these comments and so modify the proposed final corrective measure. Therefore, the public is encouraged to review and provide comment on this SB.

Background and Regulatory History

The approximately 60-acre Main Plant Site is located in the Town of Queensbury, just east of the City of Glens Falls in Warren County, N.Y. The site is situated in a mixed industrial/residential area on the northern bank of an easterly flowing segment of the Hudson River. On the west, the facility is bounded by the Glens Falls Lehigh Cement Company-owned pond (in reality, two interconnected ponds) and a small wetland. The north boundary is the Glens Falls Feeder Canal. The eastern boundary is land formerly owned by the facility which, after remediation, was sold to Warren County. A Pretreatment Wastewater Plant that processed contaminated wastewater generated at the Main Plant Site is located on a four-acre tract across from this site.

Manufacturing activities at the site date back to 1901 and initially involved the manufacture of wallpaper. In 1907, site operations expanded to include the manufacture of inorganic pigments, which eventually became the primary product line. Hercules Incorporated purchased the site in 1960 and subsequently sold it to Ciba-Geigy in 1979. Ciba-Geigy ceased production of pigments in 1989 and demolished the buildings on the site. On September 9, 1996, ownership of the Main Plant Site was transferred from Ciba-Geigy Corporation to Ciba Specialty Chemicals Corporation. Hercules and Ciba have entered into a cooperative agreement whereby Hercules is managing the corrective measures while Ciba retains ownership of the site.

On September 30, 1991, a Part 373 Post-Closure Permit was issued to the facility that included:

- The closure and post-closure care of a closing hazardous waste land disposal unit (i.e., a surface impoundment containing a listed hazardous waste sludge); and
- RCRA corrective action requiring the facility to investigate the impact of past releases of hazardous waste and hazardous constituents on the facility property and adjacent off-site areas.

Investigations concluded that hazardous constituents, primarily the heavy metals cadmium, chromium, and lead were released at the pretreatment plant and on the Main Plant Site. From this site, past releases of heavy metals occurred to the adjacent Hudson River, Cement Company Ponds, and other off-site areas.

On January 6, 1997, the Post-Closure Permit for the Main Plant Site was renewed and a SB was issued that selected the final corrective measures for the site and the pretreatment plant. The Permit required the facility to submit design documents for the final corrective measures and to continue investigations and studies for off-site locations impacted by the facility's past releases. Subsequently, the Department approved the design documents for the following remedies:

- An impermeable cover for the five-acre Corrective Action Management Unit (CAMU) located on the Main Plant Site containing a lagoon with listed hazardous waste sludge contaminated with heavy metals, spent solvent-contaminated soil from

the south waste pile and metal ore residue with some lagoon sludge from the north waste pile;

- A permeable soil cover for the remaining 40-acre Main Plant Site containing primarily metallic hazardous constituents from the prior on-site disposal of processed ore residue;
- The installation of an overburden and bedrock-contaminated groundwater extraction system located along most of the down gradient edge of the property and adjacent to the Hudson River; and
- The removal of soils contaminated with heavy metals from the pretreatment plant. This removal action has been partially completed.

Investigations and studies carried out pursuant to the renewed Permit showed that past releases of heavy metals from the Main Plant Site impacted the Hudson River, the PBA, the Cement Company Ponds and off-site residences downwind from the facility. On January 8, 1999, the Department issued a final SB and modified the Permit to require the final corrective measures at all locations except the PBA where additional studies would be necessary. Subsequently, the Department approved the design documents for the following final corrective measures:

- The removal of heavy metal-contaminated waste and sediment from an approximately 3,800-foot stretch of the Hudson River adjacent to and downstream from the site with on-site disposal in the CAMU;
- The in situ covering of heavy-metal contaminated sediment in the Cement Company Ponds; and
- The removal of heavy metal contaminated soils that posed a potential risk to public health at off-site residences. This removal action has been completed.

Information gathered during the additional investigations and studies conducted in the Ponded Backwater Area indicate a need to implement corrective measures to protect the fish and wildlife in this area from potential risk from surficial heavy metal contamination found in some of the surrounding soils and from the heavy metal-contaminated sediments found in the three small ponds located in this area. Based on this information, the facility submitted a focused CMS that presents a pragmatic removal and restoration remedy acceptable to the Department. The implementation of the PBA corrective measures in the year 2001 is expected to coincide with the implementation of corrective measures for the Main Plant Site, the Hudson River, and the Cement Company Ponds.

Description of The Ponded Backwater Area.

The PBA shown in Figure 1 is an approximately 13-acre, relatively flat, heavily vegetated area adjacent to the Hudson River, bounded by the banks of a former river channel. This area contains a series of three interconnected ponds, and is located immediately downstream of the site. It is believed that when a former dam was in place, this river channel was under water and a depositional area for discharges from manufacturing operations being carried out at the Main Plant Site. To the north and south, the PBA borders on vacant land containing large trees and dense vegetation. This adjacent vacant land extends from the Delaware & Hudson Railroad Corporation (DHRC) property to the north (which contains the railroad tracks) to the shore of the

Hudson River to the south. Both the vacant land and the PBA are inhabited by various species of wildlife. The majority of the PBA is owned by the Niagara Mohawk Power Corporation (NIMO). A small portion is owned by the DHRC.

Under normal river conditions, the PBA remains dry except for three interconnected ponds that remain wet throughout the summer. The PBA is subject to flooding in the spring, during conditions of high flow in the river.

Ponded Backwater Area Contamination

Several investigations were carried out in the PBA by the facility and the Department. The data collected and the conclusions drawn from these sampling events are summarized herein.

- A Phase I RCRA Facility Investigation (RFI) of adjacent surface water sediments in the Hudson River, Feeder Canal and Cement Company ponds was completed and reported in May 1994. The PBA was not sampled during the Phase I RFI.
  - Conclusions: There were site-related releases of metal contaminants to the Hudson River and Cement Company Ponds and that a Phase II RFI was necessary to assess the full extent of this contamination.
- After completing the Phase I RFI, it was determined that the PBA may have served as a depositional area for releases from the Main Plant Site and it should be included in the Phase II investigation.
- The Phase II RFI included the investigation on the bottom sediments of the three small ponds located in the PBA. The results of that investigation can be found in the Phase II RFI Report dated June 1997. In addition to the analysis for total metals, the bottom sediments underwent Toxicity Characteristic Leaching Procedure (TCLP) testing to determine if the sediment exhibited a hazardous waste characteristic. Refer to Drawing 0432-004 for sampling locations.
  - Conclusions: No sediment samples failed TCLP indicating that a hazardous waste was not present. However, based on the elevated levels of total metal contaminants detected in the bottom sediments and summarized in Table I below, the Department believed that this indicated a potential threat to the terrestrial and aquatic biota in the PBA.

TABLE I

Metal Contaminant	Maximum Concentration (mg/kg) (ppm)	Average Concentration (mg/kg) (ppm)
Cadmium, Total	260	110
Chromium, Total	1,300	715
Hexavalent Chromium	Non-Detect	Non-Detect
Lead, Total	1,100	644
Mercury, Total	3.8	2.5
Zinc, Total	280	182

Note: ppm means parts per million

- In the fall of 1997, the Department's Division of Fish and Wildlife conducted independent sampling of vegetation and leaf litter in the PBA to determine uptake of total cadmium. Nine samples were taken from three sampling locations and sent to the Hale Creek Laboratory for analysis.
  - Conclusions: The maximum concentration of total cadmium detected in leaf litter was 20.7 mg/kg (ppm) and in vegetation it was 2.96 mg/kg (ppm). The average concentration of all samples was 5.2 mg/kg (ppm). This data suggested that the surrounding soils may contain elevated levels of total cadmium and should be investigated.
- In March 1998, additional sampling and analysis to determine the areal extent of the contamination in bottom sediments and surrounding surface soils (0 to 6 inches deep) were carried out by the facility according to a Department-approved work plan. Although other heavy metals were expected to be present, the work plan only required the 25 samples be analyzed for total cadmium and a subset for all pertinent metal TCLP parameters. Total cadmium was selected as the indicator parameter since it is readily accumulated in biota and its toxic effects are evident at relatively low concentrations. Refer to drawing 0432-004 for sampling locations.
  - Conclusions: The supplemental RFI Report dated May 1998 indicated there were no TCLP failures. However, the maximum and average total cadmium concentrations reported in the surface soils were 280 mg/kg (ppm) and 55 mg/kg (ppm) respectively. Finding these elevated cadmium concentrations in the surficial soils triggered the need to investigate deeper for contamination.
- In August 1998, the Department approved a work plan requiring sampling and analysis of the soil for total cadmium, adjacent to previously taken surficial soil samples at the one-to-two feet depth, the shallower of the following: three-to-four feet below ground surface, the interval approximately one foot above the water table, the interval approximately one foot above the wood slash (debris) layer (if present), or the interval approximately one foot above hand auger or corer refusal. Refer to Drawing 0432-004 for sampling locations.

- Conclusions: The additional RFI Report dated September 1998 concluded that overall the cadmium contamination in the surrounding soils decreases with depth except for one sampling location intersecting a waste deposit in the western-most section of the PBA. However, this material will be removed as part of the previously approved River waste/sediment removal project. Therefore, not including that section of the PBA, the average and maximum total cadmium concentrations for the surrounding soils in the remainder of the PBA for various depth intervals from the surface are summarized in Table II.

TABLE II

Depth of Cadmium Contamination	Average Concentration (mg/kg) (ppm)	Maximum Concentration (mg/kg) (ppm)
0.0 to 0.5 feet	55.0	280.0
1.0 to 2.0 feet	12.0	63.0
2.0 to 3.0 feet	3.7	16.0
3.0 to 4.0 feet	2.9	8.9

Potential Environmental and Human Health Risks

Both the facility and the Department felt that a time-consuming and costly program to document the impact of site-related metals contaminants on aquatic and terrestrial biota was not necessary. Based on metals clean-up levels developed for other sites, both parties agreed that the soils/ sediments were impacted at levels which required remediation.

The PBA is a isolated, heavily vegetated, inaccessible area that is not frequented by the public, except for the occasional trespasser or fisherman who would remain on the site for only a short period of time. These conditions would limit public exposure to the soils contaminated with heavy metals. In addition, because of the current general inaccessibility and small size of the fish observed in the three small ponds, it is not believed that any significant amounts of fish are caught for human consumption.

Corrective Measures For The Ponded Backwater Area

The Department is recommending the selection of a pragmatic, presumptive remedy that affects approximately 5.4 acres of the PBA. The remedy will include:

- Removal of the heavy metal-contaminated bottom sediments in the three small ponds;
- Removal of those surrounding soils contaminated with heavy metals and considered a potential threat to the environment;
- Backfilling those areas from which contaminated soil will be excavated with clean materials; and

- Restoration of the backfilled areas with appropriate vegetation and expanding of the wetland area.

All contaminated materials excavated by heavy earth-moving equipment from the PBA will be transported by trucks over an access road which is expected to be constructed on properties owned by the DHRC and NIMO. Clearing, grubbing and excavation will begin after appropriate erosion and sediment controls are in place. Approximately 15,000 cubic yards of dewatered bottom sediments and contaminated soil will be moved to the Main Plant Site. There, the contaminated materials will be placed under a permeable soil cover which has been approved as part of the final corrective measures for that site. Refer to Drawing 18205-002 for a delineation of the sections to be excavated in the PBA.

After completing the excavation of approximately 1,000 cubic yards of bottom sediments containing heavy metals in the three small ponds, the topography will be changed by lowering surface grades and rerouting a culvert from which a steam flows into the western end of the PBA. These changes will allow for the interconnection of all three ponds and the formation of a continuous easterly flowing stream. The increased flow through the ponds and backwater area is expected to improve both the wetland habitats in and bordering the continuous water body to be formed by the corrective measures.

Based upon data developed for total cadmium, during the investigative phases of the corrective action program, three sections of the PBA were designated for soil removal by the Department. The extent and depths for soil removal in each section were determined by the Department after carefully examining soil sampling data collected during the investigations. The total volume of soil to be removed is estimated to be approximately 14,000 cubic yards. The average residual total cadmium concentration after excavating all three sections is expected to be less than five mg/kg (ppm). The removal action is expected to also significantly reduce the average residual levels of the other heavy metals present in the soils of the PBA. A summary of the planned soil excavation follows:

- In the western portion of the PBA, an area of approximately 3.4 acres will be excavated to a depth of two feet;
- In the west-central portion of the PBA, an area of approximately 0.7 acres will be subject to an excavation that will transition from two feet down to one foot; and
- In the eastern portion of the PBA, an area of approximately 1.3 acres will be excavated to a depth of one foot and backfilled with six inches of clean fill.

After excavation of the contaminated soil has been completed, the backfilling with sandy to clayey loam and grading will take place. Finished grades above the high water mark will be fertilized to promote development of vegetation. Wetland areas temporarily disturbed by remedial activities will be restored by planting wetland species using a combination of seed and plant plugs as appropriate to the location. Wetland restoration is planned to result in an increase in wetland (emergent and free water) area of approximately 15,000 square feet and will more than compensate for the 11,000 square feet to be lost along the southwestern end of the PBA as a result of a prior approved waste deposit removal action. This wetland restoration will also compensate for loss of wetlands in the western part of the Main Plant Site and on the Cement Company property from waste deposit removal or placement of the soil cover.

The physical removal of heavy metal-contaminated bottom sediment and soil, redeposition under a permeable cover at the Main Plant Site, and backfilling with clean vegetation supporting soils will significantly reduce the potential threat to the aquatic and terrestrial biota inhabiting the PBA. The Department may develop this land by putting in an access road for river access by official personnel. The New York State Department of Health has stated that the planned corrective measures will be protective of this access and the current casual recreational usage by the public. Redeposition of the excavated materials at the Main Plant Site under a two-feet thick permeable cover will minimize impact on terrestrial biota and prevent any direct human contact with the materials. Any contaminants that might leach out from the contaminated materials deposited at the Main Plant Site will be intercepted by the planned down gradient groundwater extraction system before being transported off-site.

List of Supporting Documents

Eckenfelder Inc., and Normandeau Associates Inc., June 1997, "Phase II RFI Report for Adjacent Surface Water Sediments AOC For The Ciba Site, Glens Falls, New York."

Eckenfelder, Inc., May 1998, "Supplemental RFI Report, Sediments AOC, Ciba Site, Glens Falls, New York."

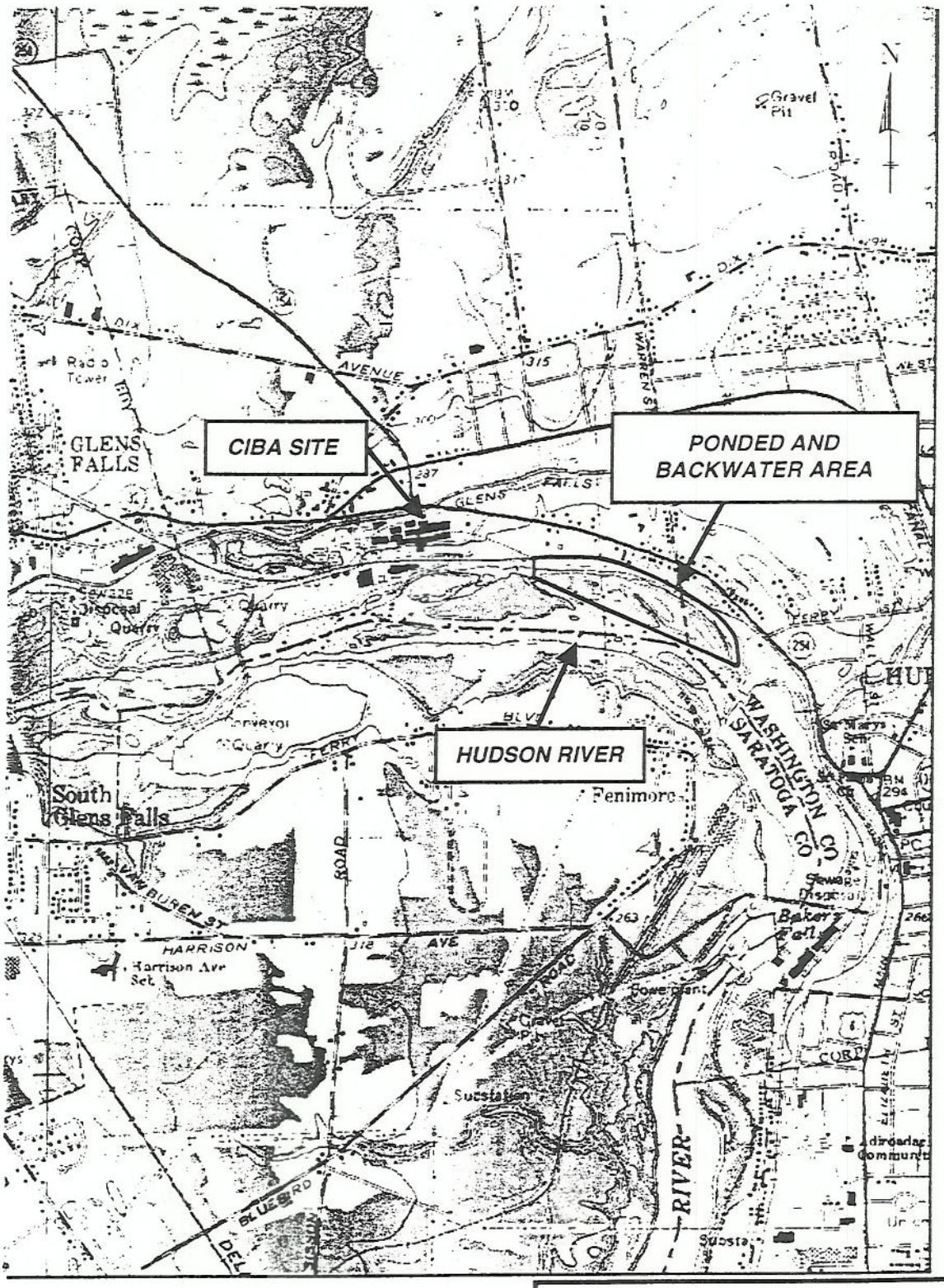
Eckenfelder, Inc., September 1998, "Additional Investigation Report, Sediments AOC, Ciba Site, Glens Falls, New York."

(Focused CMS): Eckenfelder Inc., November 1999, "Corrective Measures Work Plan, Ponded And Backwater Area, Hudson River Sub-Part, Sediments AOC, Ciba Site, Glens Falls, New York."

(Focused CMS): Eckenfelder Inc., April 16, 1998, "Conceptual Work Plan Waste Removal Program, Hudson River Surface Water Sediments AOC, Ciba Site, Glens Falls, New York."

Memorandum: Tony Gudlewski to Jack Cooper, dated November 7, 1997, "Report of Cadmium Analysis - Vegetation From Ciba-Geigy-97 Program."

Hale Creek Field Station, NYSDEC, Gloversville, New York, "Metals Analysis Report 99-14, Table 1. Cadmium, Lead And Mercury In Tissues From Program: Ciba Geigy-99; Location: Hudson River."



SOURCE: GLENS FALLS, NY (1966)
HUDSON FALLS, NY (1966)
NY 7.5' QUADRANGLES

2000 0 2000
scale feet

FIGURE 1

GENERAL LOCATION MAP
PONDED AND BACKWATER AREA

HERCULES INCORPORATED
CIBA SITE
GLENS FALLS, NEW YORK

BROWN AND CALDWELL
Mahwah, New Jersey

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