MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1996 RESEARCH VESSEL PROGRAMME

REPORT : RV CIROLANA : CRUISE 6a
(PROVISIONAL : Not to be quoted without prior reference to the author)

STAFF :

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DURATION : Left Lowestoft 1530h 10 June
Arrived Swansea 1310h 27 June
(All times are Greenwich Mean Time)

LOCATION : North Sea, English Channel, Irish Sea.

AIMS :

1. To conduct monitoring studies at stations established under the UK National Monitoring Programme (NMP).
2. To collect water samples for the analysis of HCHs along a transect through the Channel, as part of the continuing monitoring following the loss of MV Perintis in 1989.
3. To collect water samples from coastal and estuarine areas for analysis of organophosphorus pesticides.
4. To develop methods for assessment of the impact of polar organic chemicals.
5. To collect samples of surface sediment from coastal and estuarine areas for analysis of flame retardant compounds (polybrominated diphenylethers).
6. To collect samples of water and sediment from sites around Milford Haven and south-west Wales for hydrocarbon analysis in relation to the Sea Empress oilspill, including continuous fluorescence measurements of seawater concentrations 4 months after the incident.

NARRATIVE :

CIROLANA sailed at 1530h on 10 June and made for the River Tweed in fair weather. Sampling at the Tweed was undertaken both from the ship at anchor, and within the estuary using the ship's

Searider around the afternoon low tide. Sampling in the Tyne, Wear and Tees was conducted on 12 and 13 June, after which the offshore and intermediate NMP stations off the east coast were sampled. Following sampling in the Wash CIROLANA proceeded to Lowestoft, where a crew member was transferred to the ship by Searider on 14 June. Sample collection resumed at Smith's Knoll at 2140h on the 14th, with further samples being taken at NMP stations by the Outer Gabbard and in the outer Thames estuary at the Warp. On 15 June CIROLANA entered the English Channel, where further NMP stations and water sampling stations were worked on 15 and 16 June (including two within the French EEZ). CIROLANA then proceeded to the Western Approaches NMP reference station, where sampling began at 1052h on 17 June. Weather conditions here were splendid, with a calm turquoise sea and bright sunshine. A number of small blue sharks were seen swimming lazily at the surface. Both water and sediment samples were taken, the latter on a 3 x 3 grid (250m spacing) using a Hamon grab rather than the modified Day grab utilised during the remainder of the cruise. Sampling in the Celtic Deep was undertaken at 0730h on 18 June, following which sediment samples were collected at 7 sites along a transect towards Milford Haven, and then from 3 sites to the SE of the Haven entrance. The NMP site at Nash Point was occupied at 0009h on 19 June, after which samples were taken from both the ship and the Searider in Swansea Bay between 0403h and 0501h. Later that day water and sediment samples were collected from 5 sites in Cardigan Bay, after which CIROLANA steamed to anchor in the Burbo Bight on the morning of 20 June. Sampling in the River Mersey was conducted over the morning low tide (0744h to 0900h), the Searider also being used to put two crew members ashore. The intermediate NMP station in Liverpool Bay was then sampled at 1144h before CIROLANA proceeded to anchor off the River Ribble. Sampling from the Searider proved impossible within the river even at mid-tide, as the navigation channels are no longer dredged, and the stations in the Ribble were abandoned. Sampling continued at the 4 remaining NMP sites in the eastern Irish Sea and a further site off Selker Rocks overnight, after which CIROLANA continued south to anchor off Milford Haven. Searider sampling within the Haven was conducted on 21 June after which CIROLANA steamed to Mumbles Head (near Swansea), where one crew member went ashore and two others came aboard with Jan Rusin of AEA at 0930h on 22 June. The remainder of the cruise was spent around south and west Wales in the area affected by the Sea Empress oilspill in February. Sampling from the ship and/or the Searider was carried out in Carmarthen bay, St Bride's Bay and Milford Haven; and measurements of hydrocarbon fluorescence were made (by means of both continuous pumped fluorimeters and a towed body equipped with a UV-Aquatracka) in adjacent coastal areas from Skomer Island to Swansea Bay. CIROLANA docked in Swansea at 1310h on 27 June.

RESULTS :

In total 151 stations were worked during this cruise. The weather during the cruise was generally fair, and all planned work was carried out. A cruise track is appended to the report.

Aim 1 : Sampling was conducted at 25 intermediate and offshore NMP stations, for which MAFF has primary responsibility, and concentrated on chromium and mercury in seawater. Supplementary samples were also collected for the analysis of volatile organics and polycyclic aromatic hydrocarbons (PAH) in water (44 & 41 stations respectively), and for PAH in sediments (11 stations), in order to improve the spatial and temporal coverage within the programme.

Aim 2 : Samples were collected from all 12 stations of the planned English Channel transect for laboratory analysis of HCHs (including γ-HCH - lindane). This included two samples from within the Hurd Deep, within the French EEZ.

Aim 3 : Water samples were taken from 6 sites for analysis of organophosphorus (OP) pesticides. Further sampling for both OP pesticides and antifouling compounds will be undertaken during CIROLANA 6b/96.

Aim 4 : Large volume samples were collected from 33 stations for analysis of polar organic chemicals. The clean-up and fractionation of samples was carried out on board ship, and the sample extracts prepared for laboratory analysis.

Aim 5 : Fine sediments were taken from 35 stations for the analysis of polybrominated diphenylethers (PBDE). These compounds are widely used in industry as flame retardants, and they are known to be extremely persistent in the aquatic environment.

Aim 6 : Samples of water and/or sediment were collected from 69 stations between St David's Head, the Celtic Deep and Worms Head, and included an exhaustive coverage of inshore sites within the fishery closure area. No visible oil sheens were seen on the waters around Milford Haven, and initial results from the continuous fluorescence monitors suggest that concentrations in water are now declining towards background. Discrete water samples were also collected from 52 sites, and analysis of the prepared extracts in the laboratory will establish the actual concentrations and allow calibration of the fluorimeters used at sea. Outside Milford Haven the sediments sampled also appeared clean, even those collected in areas such as Freshwater West and Tenby where large quantities of oil came ashore in February and March. The only beach showing any visible oiling was Skrinkle Haven (near Manorbier, west of Caldey Island), where highly contaminated mussels had been collected in March during a Burnham survey. A further sample of (oil-encrusted) mussels was taken for analysis. This bay is small and relatively inaccessible, but there were signs that a clean-up of this beach too is underway. Although small pockets of oil probably remain at a number of sites there was no indication of sedimented oil in any samples. Hydrocarbon analyses of the sediments sampled will be made in the laboratory.

R J Law
27 June 1996

INITIALLED :

SEEN IN DRAFT : Captain D McDarren (Master) :
M Reynolds (Senior Fishing Mate) :

DISTRIBUTION :

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Cirolana 6a/96

SHOWING :
CRUISE TRACK
COASTLINE