total mineralization not exceeded 10 g/l after their sorption concentrating over KU-2-8-Asp. Thresholds of delectability calculated at the concentrating factor K=5x10^3 were equal: for cadmium (II) - 1x10^{-5} mg/l, for lead (II) - 4x10^{-4} mg/l and for copper (II) - 1x10^{-3} mg/l. In course of the atomic absorptive determination of the elements under study, it was observed that analytical signal intensities in case of using KU-2-8Asp were practically equal to those in case of using KU-2-8 and addition of 20 µl aspartic acid (1x10^{-2} M) to the metal concentrate. The result can be explained by the presence of aspartic acid fragments on the surface of KU-2-8. A similar effect takes place in case of well-known organic matrix modifiers. The effect appears stronger in the series of elements characterized by minor atomization temperatures.

The study has found KU-2-8 cation-exchange resin and its modified analogue KU-2-8-Glu to be efficient supports for chromium (VI)-diphenylcarbazide cationic complex. For determination of chromium (VI), at first, its cationic complex with diphenylcarbazide was obtained. Thereupon, the complex was extracted by samples (0.2 g) of the above-named sorbents from solution volumes of 0.1 to 1.0 l at pH 1.5-2.0. Diffuse reflection spectra were registered using thin layers at λ=500 nm. Values of the concentrating factor K were within the range of 5x10^2 to 5x10^3. The solid-phase spectrometric method allows determining chromium (VI) concentrations not more than its maximum permissible concentration in natural waters characterized by a mineralization value up to 5 g/l.

It has been established that concentrates of named metals obtained in field conditions are suitable for the subsequent atomic absorptive and solid-phase spectrophotometric analysis in the laboratory environment for a sufficiently long time.

SPILLED OIL SOURCES IDENTIFICATION IN SURFACE WATERS

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Key words: oil spill, hydrocarbons, PAC, aquatic (river) systems, oil residues, GC/MS, environmental assessment, mixed (multiple) sources

At present the scientist attention is refocused on the problem of hydrocarbon contamination in the environment. Urban run-off, together with municipal/industrial discharges, is the main sources of petroleum hydrocarbons in most aquatic systems. Substantial quantities of hydrocarbons may be released to the environment from natural deposits of oil, shale oil, and bitumen. Such discharges there may be significant accumulation of hydrocarbons in natural waters. Extraordinary high levels of petroleum hydrocarbons in water, sediments and soil have been observed following oil spills.

The identification and quantification of spill oils, its weathering and biodegradation products, and the sources of hydrocarbons in the spill area with respect to spill oil residues are essential to evaluations of fate and effects as well the impact of the spill on the environment and to predict environmental state.

Therefore, the main analytical problem is to identify various hydrocarbons sources and to distinguish quantitatively among mixed sources in the samples.

Analyzing oil polluted environment one should take into account that oil and oil product compositions are very complicated and vary in a wide range from sample to sample. Natural processes - weathering, evaporation, oxidation, biodegradation, and emulsification - change
spilled oil composition and may act to reduce the severity of an oil spill or accelerate the
decomposition of spilled oil in the aquatic environment.

In present paper the relative concentrations and molecular-weight distributions (MWD) of
polycyclic aromatic compounds (PAC) and n-paraffins in spilled oil samples obtained by
chromatographic methods (in particular, GC/MS) were used to distinguish oil and its weathered
residues from background hydrocarbons.

Although the specific criteria that we use to distinguish multiple sources are not necessarily
ablicable to all spill situations, the principles that governed their selection are.

These principles are applicable to spill situation in The Ob river basin (our experimental
data) and in the areas of Prince William Sound, Alaska, affected by the oil spill - the Exxon
Valdez spill (data from [1]).


DETERMINATION OF ACIDITY CONSTANTS OF
ACID-BASE INDICATORS BY SECOND DERIVATIVE
SPECTROPHOTOMETRY

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\textit{Key words:} Dissociation constants, weak organic acids, second derivative spectrophotometry

A method for calculation of acid-base dissociation constants of monoprotic weak organic
acids whose acid and base species have overlapping spectra from absorptiometric and pH
measurements is described. It has been shown that the second derivative spectrophotometry can
effectively be used for determining the dissociation constants, when dissociation constants
obtained for methyl orange and bromothymol blue were compared to the values given in the
literature.

PETROLEUM BIODEGRADATION IN ENVIRONMENT AND
IN MODELLING EXPERIMENTS


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\textit{Key words:} petroleum hydrocarbons, aromatics, biodegradation, composition changes, oil
spill, pollution, GC/MS analysis

Biodegradation of hydrocarbons by natural populations of microorganisms represents one of
the primary mechanisms by which petroleum and other hydrocarbon pollutants are eliminated.