

## Hubungan kualitas air dengan kegiatan penduduk di sungai sumber (studi kasus : penurunan kualitas air sungai sumber bagian hilirTeluk Balikpapan)

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### Abstrak

Peningkatan aktivitas industri kayu lapis, dermaga, dokapal, pertanian, permukiman penduduk, transportasi, dan lain-lainnya, selain memberikan dampak positif sebagai tempat pendapatan ekonomi masyarakat, juga memberikan indikasi adanya dampak negative, yaitu seperti berupa limbah cair dan padat (baik organik maupun non organik). Limbah cair seperti minyak hasil pembuangan dari kapal baik yang berlabuh maupun yang melakukan pendedokan kapal, begitu juga limbah cair dan padat yang berasal dari industri kayu lapis, permukiman rumah tangga, dan lain-lainnya.

Di sisi lain, lingkungan wilayah sungai Sumber bagian hilir, muara sungai hingga ke pesisir memiliki keanekaragaman hayati seperti, ekosistem hutan mangrove dan organisme perairan lainnya. Oleh karena itu, apabila kegiatan penduduk tidak dikelola dengan baik akan menjadi sumber pencemar bagi lingkungan dan dampaknya dapat mengancam kelangsungan hidup ekosistem perairan di sekitarnya.

Perumusan masalah ; mengkaji aspek persepsi masyarakat dengan adanya indikasi pencemaran dan kerusakan lingkungan sebagai adanya penurunan kualitas air di Sungai Sumber, mengkaji aspek penurunan kualitas air Sungai Sumber melalui parameter fisika, kimia, dan biologi.

Pertanyaan penelitian ; apa saja persepsi masyarakat mengenai penurunan kualitas air Sungai Sumber?, faktor-faktor apa saja yang menyebabkan penurunan kualitas air?, bagaimana pola penurunan kualitas air Sungai Sumber sehubungan dengan kegiatan penduduk saat pasang dan surut ?

Tujuan penelitian ; untuk mengetahui persepsi masyarakat tentang kegiatan penduduk sebagai sumber pencemar yang dapat menyebabkan penurunan kualitas air, untuk mengetahui faktor-faktor yang menyebabkan penurunan kualitas air sehubungan dengan adanya jenis-jenis kegiatan penduduk, untuk mengetahui karakteristik mengenai pola penurunan kualitas air Sungai Sumber saat pasang dan surut.

Dari hasil pembahasan dapat di simpulkan sebagai berikut;

1. Berdasarkan persepsi masyarakat, penurunan kualitas lingkungan perairan Sungai Sumber sudah di tandai adanya pencemaran dan kerusakan lingkungan. Hal ini disebabkan oleh adanya kegiatan penduduk seperti aktivitas dermaga, dok kapal, industri kayu lapis, dan lalu lintas kapal pada sungai yang ditandai adanya cemaran minyak dan aktivitas penduduk dari permukiman yang pembuangan sampah dan limbah lainnya langsung ke sungai Sumber.
2. Kegiatan penduduk, di wilayah penelitian sudah memberikan dampak terhadap penurunan kualitas air Sungai Sumber bagian hilir,
  - a) Penurunan konsentrasi oksigen terlarut (DO) saat surut Sungai Sumber di lokasi Batu Ampar (I), Muara

Rapak (II), Margo Mulyo(III) ini disebabkan oleh kegiatan dari industri kayu lapis, dermaga, pertanian, dll.

b) Kegiatan penduduk telah meningkatkan kandungan BOD (menurunkan kualitas air) saat pasang di Lokasi II (Muara Rapak). Begitu juga Lokasi I dan II saat air surut telah melampaui baku mutu. Hal ini disebabkan karena aktivitas industri kayu lapis, permukiman penduduk, pertanian dan lain-lainnya.

c) Saat air surut, pencemaran Sungai Sember ditandai oleh tingginya kandungan COD. Kondisi ini menerangkan adanya aktivitas dermaga, industri kayu lapis, lalu lintas kapal ini sebagai penyebab penurunan kualitas air berupa cemaran bahan organik yang tidak mudah terurai terutama minyak dan di bekas dan lain-lainnya. Kondisi ini terjadi di semua lokasi penelitian di Sungai Sember.

d) Saat surut, pencemaran Sungai Sember ditandai tingginya kandungan koli tinja (fecal coli), disebabkan oleh aktivitas penduduk, disekitar dermaga/pelabuhan, dok kapal, dan permukiman penduduk ikut memberikan kontribusinya terhadap penurunan kualitas air di wilayah penelitian (I, II, III, IV, V).

3. Pada saat surut, pola purifikasi bahan organik terdegradasi pada daerah Baru Tengah (V) ke hilir (muara) sungai, sedangkan pada saat pasang polanya terjadi pada daerah Batu Ampar (I) dan Muara Rapak (II) ke arah hulu sungai.

Dari hasil pembahasan dapat di sarankan hal-hal sebagai berikut ;

1. Penelitian ini studi awal dengan metode diskriptif analisis dan keterbatasan dana serta waktu, perlu dilakukan penelitian lebih lanjutan dengan parameter yang lebih beragam dan dengan uji statistik untuk melihat hubungan atau korelasinya. Hal ini untuk membuktikan pencemaran dari aktivitas dok kapal yang terindikasi sangat sulit terurai dalam air dan melihat hubungan serta dampaknya pada kehidupan biota perairan.

2. Mengingat badan perairan Sungai Sember mempunyai fungsi untuk perairan umum dan pembudidayaan biota sungai dan laut (pesisir), maka segala kegiatan penduduk perlu di evaluasi mengenai pengolahan limbah dan penatagunaan lahannya.

3. Berdasarkan karakteristik limbah yang sulit terurai hal ini terindikasi adanya kegiatan dok kapal, maka disarankan untuk mengkaji lebih mendalam mengenai parameter limbah dari aktivitas dok kapal, terutama dari limbah buangan berupa minyak dan logam berat serta plankton dan benthos yang mengendap pada dasar sediment (substrat).

E. Dattar kepustakaan : 48 (1971- 2002)

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The increasing activities of plywood industry, quay, dockside, agriculture, residence, transportation, et cetera, have resulted in some positive impacts to the income obtained by community. On the other hand, it has also resulted in some negative impacts in the form of liquid waste and solid waste (both organic and inorganic). Some liquid wastes such as the disposed fuel from an anchored ship or the docking ship, and also the liquid and solid wastes deriving from some plywood industries, people residence, et cetera.

On the other aspect, the environmental geography of downstream Sember River, river estuary and coastal area, have various biology, such as ecosystem of mangrove forest and other water organisms. Therefore, if the various activities carried out by the people are not managed properly, then various sources of environmental contaminants will arise, the impact of which will be very threatening to the survival of water ecosystem in its environs.

Problem formulation : to analyze the aspect of community's perception on the existing indication of environmental contamination caused by the quality degradation at Somber River, to analyze the aspect of water quality degradation at Somber River by means of parameters of physics, chemistry, and biology.

Questions of study : what are some perceptions of community relating to the water quality degradation of Somber River?, what factors may cause the water quality degradation?, what is the type of water quality degradation of Somber River in relation to various activities carried out by people in the tide period?

Objective of study : to identify the community's perception regarding the activities carried out by people as the sources of contaminator which may cause the water quality degradation, to identify some factors which may cause the water quality degradation relating to the existing types of activities carried out by the people, to identify some characteristics regarding the type of water quality degradation of Somber River in the tide period.

Based on the results of analysis :

1. Based on the community's perception, the quality degradation at the Somber River environment has been indicated by the existence of various activities carried out by people, such as activities at the dock, ship dock, plywood industry, and ship traffic at the rives which are indicated by the contamination of fuel and various activities carried out by people at the residence which directly dispose their wastes to Somber River.
2. Various activities carried out by the people at area of research have indicated some impacts on the water quality degradation of downstream Somber River :
  - a) Degradation of dissolved oxygen concentration (DO) in the tide period at Somber River located at Batu Ampar (I), Muara Rapak (II), Margo Mulyo (III), caused by the some activities relating to plywood industry, dock, agriculture, etc.
  - b) Some activities carried out by the people have increased the BOD content (decreasing the water quality) in the tide period at Location II (Muara Rapak). The subsided water at Location I and II has surpassed the quality standard. This is caused by the existence of activities relating to plywood industry, people's residence, agriculture and others.
  - c) In the tide period, the contamination at Somber River is indicated by the high BOD content. This condition indicates that the existence of activities at the dock, plywood industry, and ship traffic as the cause of water quality degradation in the form of organic substance contamination, especially used fuel, oil, and others. This condition has occurred at all study location at Somber River.
  - d) In the tide period, contamination of Somber River which is indicated by the high content of fecal coli, caused by the activities carried out by the people around the dockside/harbor, ship dock, and people residence, has contributed to the water quality degradation at the area of research (I, II, III, IV, V).
3. In the subsided period, the type of purification of organic substance degraded at Baru Tengah (V) downstream the river, while in tide period,' the type can be found at Batu Ampar (I) and Muara Rapak (II) to the upper course of river.

Based on the results of discussion, it can be suggested as follows :

1. This preliminary study is based on the method of descriptive analysis and limited fund and time. It should

be carried out an advanced study which is based on various parameters and statistical testing in order to identify the existing correlation. This is aimed at proving the contamination resulting from some activities performed at the ship dock and at identifying the its correlation and impacts one the life of water biota.

2. Considering that the water agency of Somber River has the function of general water and cultivation of river's and sea's biota (coastal area), then all activities carried out by the people should be evaluated relating to the waste handling and land utilization.

3. Characteristics of waste have indicated the existence of activities carried out at the ship dock. It is then suggested to perform a deep analysis on the parameter of waste based on the activities carried out at the ship dock, especially for the wastes in the form of fuel and heavy metal as well as plankton and benthos found at the substrate.

E. Number References : 48 (1971 - 2002)